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IN

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PSYCHOLOGY

in

NURSING PRACTICE

by

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PREFACE

Psychology in Nursing Practice has been written for nurses in training and nurses in service. Although every effort has been made to be scientifically accurate, the authors have not attempted to write a system of psychology or to make academic psychologists out of the nurses who may study the volume. They have attempted to select materials and to present points of view that are of most help to the nurse as a person in her everyday living and in her profession. Society demands that the nurse be regarded as a personality in her own right, to be educated and refined, and to think and act increasingly on her own responsibility—just as any normal individual should in all human relationships. It is the hope of the authors that the functional assimilation of the content of this book will help in the achievement of this goal.

The aims of this volume are essentially the aims of the psychology course which is offered in schools of nursing. Briefly, these aims are both cultural and professional. More specifically, they are as follows:

I. To set forth simply and concisely the facts and principles of psychology which are of importance to student nurses as persons for everyday, happy, successful living.

1. To acquaint the student with the nature of human personality, the factors and forces that influence it, and the various procedures to use for its improvement.
2. To acquaint the student with the basic principles of mental hygiene.
3. To help the student understand why the human organism behaves as it does and to appreciate the effects of human motives and drives on the mental processes and behavior.
4. To furnish sound guidance for increasing personal efficiency through the development of effective learning and studying habits and attitudes.

5. To develop in the student an appreciation of the importance of the scientific attitude toward human behavior and to show how such an attitude can be developed in the student.

6. To help the student become aware of a personal need of psychology in order that he (she) may make better adjustments to his (her) own problems.

7. To develop a genuine interest in the field of psychology and its applications to daily living.

II. To set forth simply and concisely the facts and principles of scientific psychology which are of importance for the nursing profession.

1. To interest the student in the study of the patient as a person.

2. To acquaint the student with some of the factors, forces, and conditions which influence the patient's attitudes, moods, actions, and recovery.

3. To help the student appreciate the relationships between psychological processes (mental conditions) and physiological and pathological processes.

4. To develop in the student an appreciation of individual differences in patients, to show her how to meet these differences intelligently, and, if necessary, how to adjust to them.

5. To acquaint the student with significant facts concerning human relations, securing rapport, building morale, and the like.

6. To acquaint the student with some of the more common psychological, psychiatrical, and medical procedures and techniques for rehabilitating patients (reëducation, hobbies, psychotherapy, etc.).

7. To furnish the student with a grasp of psychology which will enable her to be a more effective and competent nurse.

The authors have treated the problems that nurses face. If these lessons are mastered and appropriate applications made of the facts and principles, the nurse should become better able to solve her own problems of adjustment and living and become a better nurse. The book will be valuable to the extent that it produces changes for the better in the

nurse's living and professional work. Much of the value of any course depends on the way it is taught. If the emphasis falls on rote memorizing, fact learning, or stifling questions about the content, the outcomes will be disappointing. On the other hand, if the instructor uses the book to stimulate discussions by members of the class, to relate the content to life experiences of the students, and to illuminate their present problems, the values accruing from its study may be considerable.

As the instructor will note, this textbook is based to a great extent upon the suggestions given in the 1937 edition of *A Curriculum Guide for Schools of Nursing* (pp. 195-209). The four units recommended in the *Curriculum Guide* for a course in psychology are as follows: a short introductory unit entitled the "Nature and Methods of Psychology" (Chapter I); the "Biological and Social Basis of Behavior" (Chapters II, III, IV, V, and VI); "Essentials of Learning" (Chapters VII, VIII, IX, and X); and "Personality and Adjustment" (Chapters XI, XII, XIII, XIV, XV, and XVI). Not only does this textbook conform to the pattern of organization recommended in the *Curriculum Guide,* but the philosophy of the contents is essentially the same.

Psychology in Nursing Practice should guide the student in making harmonious adjustments to her associates, in achieving prompt and satisfactory personal insights, and in applying the principles of psychology in her nursing experience. The material of this textbook has been based upon the work and the problems of the student nurse. Few professions require a greater understanding of psychology than does the nursing profession. In the advanced courses in child nursing and psychiatric nursing the student will gain further insights into the nature of mental activities and the methods whereby they are scientifically investigated. This textbook lays the foundations for these subsequent courses; hence it emphasizes the normal personality and the meaning of mental health. Throughout the book, therefore, the emphasis is upon psychology in daily living and upon the nurse, her patients, and her associates as personalities living in a complex social environment.

To facilitate the teaching of the volume, center and side headings have been used to show the organization of the material, provocative questions and selected references have been appended to each chapter, and a list of supplementary references in the field of psychology is presented in the Appendix.

The authors are deeply indebted to many authors and publishers for their kindness in allowing the use of copyrighted material and to many friends, associates, and professional leaders for their opinions and criticisms. Especially are they indebted to Miss Blanche Edwards, Principal of the Bellevue School of Nursing; Louis Schlan, M.D., of the United States Public Health Service; and to Dr. Robert M. Lindner, Chief Psychologist at the Northeastern Penitentiary, Lewisburg, Pa., for their valuable assistance and suggestions in the preparation of various parts of the manuscript. Acknowledgments are made to the following for their suggestions or information: Miss Claribel A. Wheeler, Executive Secretary of the National League of Nursing Education; Miss May Kennedy, Chairman of the Committee on Mental Hygiene and Psychiatric Nursing of the National League of Nursing Education, and Associate Director of the New York Hospital School of Nursing and Director of Pedagogy; Miss Edith Potts, Director of Nurse Testing Division, Psychological Corporation, New York; Miss Mary M. Roberts, Editor of *The American Journal of Nursing;* Dr. Theresa I. Lynch and Mr. Earl Taylor of New York University; Dr. Frederick H. Lund of Temple University; Dr. Alexander Apisdorf of the Brooklyn, N. Y., Technical High School; Miss Sara Sweet of the School of Nursing, Vassar Brothers Hospital, Poughkeepsie, N. Y.; Miss Margaret E. Conrad, Professor of Nursing, Presbyterian Hospital School of Nursing, New York; Dr. George Crile of Cleveland; Dr. Charles B. Davenport of Cold Springs, New York; Miss Effie J. Taylor, Dean of the School of Nursing at Yale University; Mrs. Jessie MacIntosh of the New York Hospital; Miss Esther M. Thompson, Director of Nursing Education, Allegheny General Hospital, Pittsburgh; Miss Mildred Blythe, Clinical Instructor, Methodist Hospital, Brooklyn; and last but not least to Mr. J. N. Myers

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The authors, however, assume complete responsibility for the final form of the manuscript and for any errors that might be found.

P. L. H.
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PSYCHOLOGY

IN

NURSING PRACTICE

CHAPTER I

INTRODUCTION

A General View of the Functions of the Nurse

The student nurse.—Fortunate, indeed, is the individual who has selected a vocation suited to his interests and abilities. Among the reasons why young people choose the nursing profession are the following: a genuine liking for other persons, a desire to understand more about human nature, and a wish to help people who are in difficulties. Unless the student nurse has a real sense of pleasure in being with other people, even when they are difficult to get along with, she may be unhappy in her choice of a profession. Indifference to the troubles of others, lack of patience and sympathy, and a self-centered personality might not be detriments in some fields of work, but they are disastrous in the nursing profession.

In addition to having interests of this type, the student nurse must possess certain definite abilities. First, she must be intelligent, since her course of study is difficult to master and since she must be able to meet many emergency situations. Secondly, she must have the ability to understand and to carry out involved directions. Consequently, if she is forgetful or lacks ability to concentrate, the results may be fatal. Thirdly, she must be tactful and poised, even in difficult situations. On many occasions she has to deal with disturbed patients, with visitors who make unreasonable demands, and with superiors who may seem to be unnecessarily brusque. In addition, she has to adjust her own personality to the routine of the hospital, and thus to conform to various regulations in a cheerful spirit. Fourthly, she must possess the ability to grow in professional competence. Her work does not consist of a body of knowledge which can be mastered once and for all. On the contrary, medical science is

constantly advancing; hence the nurse has to continue her studies all during her professional career if she would keep abreast of new developments.

Once the student nurse has assured herself that she has a genuine interest in helping people and a willingness to study hard in order to give effective service, she faces two immediate responsibilities. First, there is a definite body of knowledge with which she must become familiar. Secondly, she must learn how to apply these principles in her work. Thus, the first step is to master the principles of nursing and to learn some of the basic sciences which are related to nursing. Among the sciences which have made great contributions are the following: physiology, sociology, psychology, biology, chemistry, and physics. Medicine itself, instead of being a single science, draws upon many fields of science for its principles. Hence the nurse is required to master certain parts of these specialized fields of science. She could not properly assist the physician unless she knew something about the symptoms of various diseases, the course of treatment prescribed, and the indications of complications or improvement. To administer the prescribed diets for patients, as well as to advise people outside the hospital, she must have a knowledge of the science of dietetics. In short, to speak of a trained nurse being without scientific knowledge is to use a contradiction in terms.

A thorough knowledge of the scientific method and a familiarity with some of the fields of science are essential in eradicating superstition and error. Not only does the student nurse learn the truth herself, but also she learns how to counteract the unscientific beliefs and practices of all people with whom she comes into contact. Through the study of science she learns about the importance of preventive medicine as well as about the care of the sick. Medical science, of course, is not merely concerned about helping people who are ill or afflicted. It also accepts responsibility for assisting normal, healthy individuals to maintain their health. Consequently, the nurse is enlisted in a crusade to educate people about the proper care and maintenance of their health. Without a scientific basis, these instructions would be futile and worthless.

In the second place, the student nurse has to learn how to apply her knowledge in a variety of situations. For the most part, she carries out faithfully a set of instructions which she has been trained to understand. Occasionally, she has to meet emergency situations without jeopardizing the success of the treatment or the welfare of the patient. On many occasions she is consulted for advice about diet, proper health regimen, or symptoms. In these situations she must be tactful, intelligent, and informed. On the one hand, she must not exceed her authority or accept responsibilities which properly belong to the physician; and on the other hand, she must satisfy the inquirer and keep him or her from taking "quack" prescriptions. The general public has become accustomed to have the nurse meet emergency situations calmly and purposefully. To achieve this ability, the student nurse is given thorough training in applying her knowledge.

In the work of the student nurse there are complicated human relationships. As knowledge, skills, and responsibilities increase, so do the personal relationships of the nurse become more complex. Upon entering a school of nursing, the student has already reached a level of some maturity, but she doubtless finds that many difficult adjustments have to be made. The student must work under close surveillance; there seems to be little opportunity for initiative. There is, she soon learns, no place for laxity of habits in this new environment. Adjusting herself to her fellow-students, to those who are more advanced in their training, and to her superiors may be a difficult task. As she advances in her education, however, she finds that it is possible to adapt herself to the regulations and yet at the same time to preserve her individuality.

In almost any field of work the ability to get along harmoniously with other people is a tremendous asset. Particularly is this true in the nursing profession. Knowledge which one has acquired from previous experiences may be utilized in improving one's ability to adjust to present situations. To a certain extent, the study of psychology serves to give people a better insight into the behavior, motives, and feelings of human beings; and thus to improve one's ability to get along pleasantly and effectively with others. More espe-

cially does the constant training of the student nurse give an opportunity to learn how to apply these principles in the field of human relationships.

Thus, the student nurse must have certain interests and abilities. She must have a real liking for people and a genuine zest for mastering scientific knowledge. In addition, she must learn how to apply this knowledge in the intelligent care of the sick and in the health education of the well. Since the work of the nurse involves close relationships with people, she must learn how to adjust herself harmoniously to all sorts of individuals, whether they be querulous, unreasonable, "bossy," or agreeable. All these requirements necessitate constant growth in knowledge, skill, habits of work, and personality. A student nurse who is content to satisfy the minimum requirements to become a registered nurse is unfair to herself, her profession, and her patients. No truly professionally minded nurse is ever content with mediocre achievement.

The graduate nurse.—Following graduation, the nurse finds that a number of fields are open to her. Possibly no other profession offers so great a variety of opportunities.[1] No matter what the general economic situation may be, there is a demand and a need for well-qualified nurses. In many cases the graduate may elect to get further experience by joining the staff of the hospital. For those who find their greatest satisfactions in giving direct assistance to other people, the work of the staff nurse or the private-duty nurse is attractive. Direct ministration to the sick is, of course, the fundamental concept in nursing. For those who have executive ability there are many opportunities in hospitals, schools of nursing, and the field of public health nursing. The public health nurse makes a great many contacts with various

[1] Branches of nursing: (1) private duty; (2) institutional nursing and supervision; (3) public health nursing; (4) visiting nursing; (5) teaching in nursing schools and in other schools and colleges; (6) Federal Government nursing (Army Nurse Corps, Navy Nurse Corps, Nursing Service of U. S. Indian Service, U. S. Public Health Service, U. S. Veterans Administration); (7) missionary nursing; (8) nursing in hospitals maintained by oil and fruit companies in Central and South America; (9) industrial nursing; (10) doctors' and dentists' offices; (11) department stores and large offices; (12) with transportation companies as hostesses; (13) laboratory and research technicians.

people in the community. She counsels and advises many persons on a great variety of subjects, and she encounters innumerable problems of human relationships. Some who are interested in the work of the public schools find a great opportunity for work in preventive medicine and health education as school nurses.

For those who are particularly well suited for instructional work there are openings in schools for nurses. Those who find that they have interest and ability in scientific work may be attracted by the many possibilities which lie in the field of laboratory research. Among the innumerable other fields are various branches and forms of industrial and public health nursing. For certain fields of nursing work, advanced training is required. Many universities now offer courses for nurses who wish to qualify themselves for specialized positions within the nursing profession. During the years covered by the training of a student nurse, a young woman has a good opportunity to discover her aptitudes and to determine upon her career as a graduate nurse. Of course, the student most likely to be selected for a choice position upon graduation is the one who does the most effective work during her student days.

Nursing is a broad profession, and the possession of a diploma does not indicate that one's education is complete. In the nursing school, the student is given the basic knowledge and experience fundamental to the profession; but the graduate nurse must continue to grow professionally. It is extremely important that nurses continue to keep in touch with advances in medical science. Facts and principles which are accepted today may be considered inadequate tomorrow. Hence the nurse who is content to remain static may find herself pushed out of the position which she now holds. Now, as in the past, there is an undersupply of qualified persons in nursing. For that reason the well-trained nurse finds little difficulty in advancing to a position of responsibility and trust. Postgraduate training gives an opportunity for some nurses to qualify for fields in which there is almost no competition. Recent advances in medicine are constantly opening up new opportunities for the better prepared and more highly specialized nurse.

The Personality of the Nurse

Nursing as an art.—To distinguish between *art* and *science* is a difficult problem. At the present time, nursing requires the mastery of many scientific principles and procedures. Nevertheless, if the nurse cannot deal satisfactorily with the patient as a person, her scientific knowledge may not accomplish a great deal. No patient wants to be treated as though he or she were only a disease or a symptom. Science gives the information necessary to deal with the disease; but art is required to make the patient obey orders, conform to the rules, and remain in bed until he or she is cured. Science supplies the techniques; art is the expression of technique through personality. If nursing were wholly a science, patients could be treated as objectively as though they were machines. If there were no science at the basis of nursing, the work would be futile and meaningless. Since the work of the nurse involves many complex human relationships, it may be regarded as an art. To the extent to which it uses tested knowledge, it is a science. In the nursing profession, therefore, art and science go hand in hand.

Personality.—The art of nursing requires a pleasant personality. Just what is meant by that phrase will become clear if we think of somebody to whom we would ordinarily apply it. To have a "pleasant personality" means to make a certain effect upon other people. In the terminology of the psychologist, personality is the social stimulus value of the individual. Some people attract us by their appearance, voice, manner, or behavior; and we say that they have "pleasant personalities." Others repel us because they are rude, untidy, impolite, or inconsiderate; we say that they have "unpleasant personalities." Nothing could be of greater value to each one of us than to find out how we affect other people, and then to try to correct those things which they do not like. For the nurse, a pleasing personality is a necessary asset. To a very large degree, one may be able to alter the personality completely, even to change an "unpleasant" personality into a "pleasant" one.

In the art of nursing it is essential to produce a beneficial effect upon the patients. They must not be irritated by

unpleasant mannerisms or habits, by supercilious or inconsiderate remarks, or by tactless and impatient replies to their questions. Serious personality conflicts may arise from an injudicious remark given by a busy nurse to a demanding patient. By cultivating a sense of humor, the nurse may be able to deal with certain situations which arise. Patients expect the nurse to be interested in them, and they become upset when they do not receive all the attention to which they believe that they are entitled. Occasionally, therefore, it might be well for the student nurse to consider what effect she has upon her patients, how well they seem to like her, what things displease them, and whether it is worthwhile to correct these aspects of her personality.

Nursing has a much broader task than merely to care for the physical needs of the patient. The well-qualified nurse constantly grows in her understanding of herself and of other people. If the patient is worried about conditions at home or troubled regarding the thought of an impending operation, the nurse may do a great deal to comfort and reassure the individual. Few persons, with the possible exception of the clergy, have an opportunity to enter into such close personal relationships as the nurse does. Some nurses have the power of quieting an excited patient, of comforting a sick child, of getting an uncoöperative patient to obey the physician, and of establishing confidence. These effects they produce by no drugs or magic. They have learned the difficult art of dealing with people. During the period of training, the student nurse will have many opportunities to observe these nurses at work and to learn what techniques they use in their personal relationships with patients, relatives of patients and colleagues.

Some personality traits.—A single distinctive characteristic of personality is called a trait. Thus, meanness, generosity, dishonesty, tolerance, persistence, and patience are examples of personality traits. The nurse must possess a number of personality traits to a relatively high degree if she is to be successful in her career. First, she must be neat and orderly in dress. Strongly enforced rules exist in the school of nursing to insure the establishment of this trait. Other desirable traits, unfortunately, cannot be so easily established by regu-

lation. Secondly, the nurse must cultivate a pleasant voice. Forced optimism, loud tones, incessant laughter, or an authoritative tone are all objectionable. A calm, assured, quiet voice does a great deal to inspire confidence and obedience to instructions. Thirdly, the nurse must carry herself well. A slouchy posture has an unpleasant effect upon well people, and it is doubly objectionable to those who are ill. Fourthly, the nurse must convey the impression of being professionally competent. This trait, of course, is based upon thorough training in the work of the nurse. Fifthly, the nurse must have the ability to control her emotions, even under trying circumstances. Sixthly, she must be able to inspire confidence and to gain coöperation and good results by the intelligent manner in which she meets every situation.

It is essential that the nurse learn how to solve her own personality problems with intelligence and that she develop a satisfying philosophy of life. Now that the hours of employment have been reduced, the nurse has more opportunities to enrich her personality through hobbies, recreational and educational activities, and community affairs. Through worthwhile activities in off-duty hours, the nurse can return to her work with renewed enthusiasm and vigor.

How Psychology Helps the Student Nurse

What psychology is.—Psychology is the science that deals with the behavior, motives, and emotions of human beings. Various topics customarily referred to as "mental activities" lie within its province. For example, sensations, perceptions, learning, imagination, reasoning, emotions, and intelligence are a few of the topics which scientific psychology investigates. Even in ancient times thoughtful people were interested in systematizing knowledge about human nature. For the most part, they were content to speculate and theorize. Modern psychology, on the contrary, has no place for arm-chair theorizing. It seeks to build up a valid body of scientific knowledge by the use of experimental methods. Within the half century that psychologists have employed the scientific method in their study of human behavior, they have built up more real knowledge of the subject than was developed

during all the preceding centuries of philosophizing and speculation.

The value of psychology.—Psychology makes two important contributions to the life of the student nurse. First, it gives the student a better understanding of herself. Psychology has made many contributions to the discovery of aptitudes and interests, to a better understanding of human motives and emotions, and to a valid knowledge of the learning process. By the use of psychology the student is able to obtain a more satisfactory understanding of her mental processes, and thus to establish a better control over their manifestations. Secondly, psychology contributes to our understanding of other people. We learn why they differ from us in their likes and dislikes, their interests and abilities, and their manner of adjusting to various situations. As we grow in self-knowledge, so we develop also in our knowledge of other persons. We find that the mental life is not the chaos which it may seem to be at first, but that there are laws and principles in mental activities just as there are elsewhere in the universe.

Self-study reveals the fact that thoughts, actions, motives, emotions, and attitudes are related to our adjustments to the total environment, past and present. They are affected by our health, our purposes, our past experiences, the goals which we strive to reach, and the situations which confront us. In other words, we respond as totalities. Observations of other people indicate the fact that similar principles govern their behavior. A patient lying in a hospital bed is not a disease but a *person* with problems of adjustment, desires, feelings, mannerisms, and experiences, whose illness alters, temporarily or permanently, the totality of behavior. From a study of psychology we learn why people differ from one another and how circumstances, apparently trivial, may change the entire pattern of behavior. Both self-study and observations of other people reveal the fact that human beings are dynamic totalities, and hence that anything which affects us in one respect may at the same time profoundly alter our behavior in all respects.

Of particular importance for nurses is a knowledge of motives. The successful nurse is able to appeal to her patients

in such a way as to make them desirous of coöperating with her, the physicians, and the other members of the staff. This result she achieves by appealing to the proper motives. From her understanding of human motives she is able to comprehend the reasons why some patients have become alcoholic or drug addicts, why other patients want to be the center of attention in the ward, and why a number of patients seem to spend their time finding fault with everyone else. Through the application of scientific knowledge about human motives, advertisers are able to create an almost irresistible desire for their products. Nurses could be just as effective—and much more helpful to mankind—if they tried to obtain and to apply a sound knowledge of motives to their work.

The nurse soon learns that there is a close relationship between the mental processes and the physical health of a person. Sick people are likely to be upset in their mental activities. Thus, an individual who, during good health, may be happy and well integrated becomes childish and irascible in a time of illness. As everyone has observed, a common symptom of the incipient stage of a cold is a growing feeling of impatience, general discomfort, and peevishness. Chronic ill health predisposes an individual to pessimism, whereas good health makes us optimistic. In times of illness it is difficult for us to control our emotions, to reason correctly, and to be patient. An understanding of the relationships between physical condition and mental activity is an important part of the equipment of the nurse.

From a knowledge of the nature of the learning process the nurse is better able to master her own studies and to give directions to her patients and subordinates. Psychology has a great deal of practical information to contribute to this topic. The student can acquire better skills in learning and recalling material useful in her work; she will find that experimental investigations of the relative values of various study procedures are applicable to her own study habits. By utilizing this information about the learning process, she is in a better position to teach her patients how to carry out the regimen that has been prescribed for them. She is also able to instruct parents and other members of the patient's family about their duties with reference to the patient.

In the next place, a study of psychology gives the student an understanding of the normal, well-integrated personality, what it is and how it is preserved. This knowledge is of great importance for the student nurse herself and for her relationships with all her associates. The student nurse has many duties and responsibilities which necessitate a close supervision over her; consequently, her work is sometimes criticized by one higher in authority. Whereas the well-integrated student understands the purpose and helpful nature of these criticisms, one who is badly adjusted may become upset and antagonized by them. A student who is unable to accept suggestions and criticisms has a warped personality; her career as a nurse is likely to be unhappy. It is particularly important that the nurse understand the personalities of her patients, and that she should be able to help them become better adjusted to their situations. Psychology has much to contribute about the effects of frustrations upon the personality, about the importance of mental health, and about the importance of a well-adjusted personality.

Finally, the study of psychology acquaints the student with a useful, interesting body of knowledge about human nature. An account of the facts and principles of psychology would fill many large volumes. The topics would range from the results of animal experiments, through investigations of the behavior of children and adolescents, to an account of the mental characteristics of the aged. Included in a complete presentation of the field would be descriptions of geniuses, feeble-minded, normal and deranged individuals, the applications of psychology to various fields, theoretical accounts of such topics as emotions and motives, and the results of innumerable scientific experiments. Yet, one who became thoroughly conversant with all the extensive details of modern psychology might not be more efficient in her daily work, better able to get along with her associates, or more suitably adjusted to her environment. To get the most out of the study of psychology, the student nurse must seek constantly to apply the principles in her own daily life. In other words, psychology is not merely a body of knowledge which has to be mastered in order to pass an examination; it is a set of facts and principles that can be put to immediate use in

making the personality of the student more effective and purposeful. Studied from this point of view, psychology should make a helpful contribution to the life of the student nurse.

The Methods of Psychology

In each science there are special tools and procedures used in gathering and classifying data. The bacteriologist uses the microscope; the chemist employs heat, filters, retorts, and various substances; the geologist makes use of his hammer, microscope, and other equipment. Psychology has a number of special methods which have been devised to collect and organize the data of its field of study, and in addition it makes use of a number of procedures which are employed in other sciences. In all fields of science, the experimental method is most highly esteemed, and the psychologist has made good use of the experimental technique.

The experimental method.—The guiding rule in a scientific experiment is to control the situation so completely that there will be only a single variable. In other words, the rule is to have only one factor varying at a time. The experimenter is able to deduce the cause and effect relationship among the factors in the situation by observing the results when he applies this variable, that one, and so on through the list. At length he discovers that a given result occurs only when one variable is present in the situation, and that it never occurs when the other variables are present. Through the use of mechanical contrivances the experimenter is sometimes in a position to bring the total situation under accurate control. Particularly is this the case in the physics or the chemistry laboratory. In other fields of science it is often difficult to establish perfect control over the entire situation. Owing to the infinite complexity of human behavior, the psychologist has great difficulty in experimental work. That fact, however, never deters the psychologist from making a rigorous effort to establish full control over all factors in a given situation.

A simple experiment in psychology.—One investigator desired to find out whether there is a relationship between the sleep disturbances of children and seeing exciting motion

pictures.[2] To record the restlessness of a child during sleep, the experimenter invented an arrangement whereby changes in posture were registered and the time of occurrence was obtained. The children were taken to the motion picture theater at various times during the day and evening, and there seemed to be definite evidence that sleep disturbances followed the witnessing of an exciting picture. The investigator, however, was uncertain about the validity of the inference regarding the relationship between motion pictures and disturbed sleep. Therefore, he measured the effects of keeping the children up until very late at night. He found that they were as restless in sleep when they had been kept awake until midnight as they were after they had seen an exciting picture. Furthermore, he learned that a cup or two of coffee taken with the evening meal produced similar disturbances in the sleep of some of the children. A striking fact revealed by this study was that children differ very much in the way they are affected by motion pictures. In short, he concluded that sleep disturbances often follow attendance at exciting motion pictures, but that other factors than the picture may be operative in determining the restless sleep.

An experiment on one individual.—Much may be learned from a thorough experimental study of a single individual, even when a person uses himself as the subject for the experiment. For instance, about sixty years ago a psychologist wished to know more about memory; hence he devised a series of experiments to perform on himself.[3] He found, for example, that as he increased the amount of material to be learned, the amount of time required to master it was not increased at the same rate. If, for instance, it took him seventeen readings to learn a list of twelve meaningless syllables, it did not require twice as many to learn twenty-four. As a matter of fact, he had to read the longer list forty-four times in order to recite it correctly. Through a great many carefully planned experiments this investigator was able to

[2] For an account of this study and many other experimental investigations dealing with the effects of motion pictures upon children, see W. W. Charters, *Motion Pictures and Youth, a Summary of the Payne Fund Studies* (Macmillan, 1933).

[3] Hermann Ebbinghaus. For a full account of his experiments, see H. E. Garrett, *Great Experiments in Psychology* (Appleton-Century, 1941), Chap. x.

discover a number of important characteristics of the memory processes.

Another interesting experiment in which the investigator used himself as the subject has been reported.[4] This psychologist blindfolded one eye and placed before the other a lens that would invert the image. That is, the image would fall upon the retina in a new position. For three days he kept himself completely blindfolded except for the time during which he relied wholly upon the use of these abnormal images. He reported that everything seemed to be "upside down" and that he had great difficulty in going about. Even within the short time covered by this experiment, however, he commenced to learn how to adjust himself to these new visual experiences. So much did he learn from this experiment that he later undertook a more extended investigation, this time wearing the lens for eight days.

Group experiments.—Most psychological experiments include large groups of people. For instance, two psychologists wished to determine whether a study of Latin increases the English vocabulary. Those who uphold the value of Latin in high school have contended that Latin is useful as a means for increasing one's facility in the use of the English language, others have objected to the allotment of a large amount of time to the study of Latin, and many educators have advocated that Latin be dropped from the curriculum. By testing 717 first-year Latin pupils and 677 non-Latin freshmen, they concluded that a study of Latin acquaints the pupil with English words of Latin origin but that it contributes nothing to the ability to recognize words of non-Latin origin. In an experimental investigation of more than 13,000 high school pupils, another psychologist found that a year of training in Latin contributes little to the pupil's ability to pass tests in reasoning ability. According to this study, Latin seems to contribute less than bookkeeping and physical training do.

Uncontrolled observations and appraisal.—"Commonsense" information about human nature, anecdotes, reminiscences, accounts of the behavior of household pets, and literary accounts of human beings have built up many false

[4] G. M. Stratton, "Some Preliminary Experiments on Vision," *Psychological Review*, III (1896), 611-617.

notions about the facts and principles of psychology. When many of these generalizations are subjected to experimental investigation, they are found to be fallacious and untenable. This method, however, has been used by laymen for centuries. No doubt, certain of the generalizations contain a measure of truth; at least, they may have some value as descriptions. Most of them, however, are based upon hasty inference, neglect of negative evidence, and prejudice of the observer. For instance, much of the current belief about the so-called innate differences among the races of mankind is, from a scientific point of view, of no value whatsoever.

Nevertheless, as a matter of practical necessity, the nurse is frequently asked to give her estimate of the personality of a patient. Likewise, teachers and social workers may find it expedient to make subjective appraisals of various individuals with whom they work. It is essential that these appraisals be given in a tentative manner and that a few diagnostic labels are not overworked. For instance, a prison physician found that he was in the habit of sizing up all his patients as "psychopaths" or "not psychopaths." From a careful reading of great plays and novels, the student of psychology may become reasonably adept in forming useful estimates of personalities and in applying some meaningful descriptive labels. Of all the methods used in psychology, however, this procedure of making subjective personality estimates is the most unscientific. Consequently, judgments about the structure of an individual's personality must never be given in a dogmatic or pontifical manner.

Introspection.—The one method which is peculiar to psychology and which is not employed in other sciences is the use of introspection. Literally, this word means "to look within." For example, a patient is asked to tell how he feels; and he reports upon his introspections. A large part of the procedure of the eye specialist involves the use of introspection. He asks his patient to tell him how satisfactorily he can read while wearing lenses of various strength. Physicians soon learn that the introspective judgments of their patients require careful interpretation. A patient in real distress may insist that he "feels all right." Another patient with a minor ailment may exaggerate his pains.

Thus, intelligent diagnosis and treatment of a patient may depend on results secured from the combined use of the objective observation method and the introspective method. The physician's observations of the patient (signs) and the patient's own report on how he feels (symptoms) are needed.

Nevertheless, certain types of data have to be collected by introspection. If we wish to know what is going on in the mind of another individual, we have to ask for an introspective report. If we confined ourselves to direct observation, we might miss the most important factors in the behavior of the person. To cite an example, imagine that we are observing a young woman eating raw oysters at a formal dinner party. External observation might lead us to conjecture that she likes them. By questioning her, however, we might be told that she dislikes raw oysters intensely and that she made a show of eating them in order not to give offense to her hostess. If we want to learn how a person solves a problem, paints a picture, composes a song, or writes a story, we have to use the method of inquiry. Although introspection is sometimes unreliable, it has an indispensable place.

Rating scales, check lists, and questionnaires.—Rating scales have been devised for the purpose of giving a score which indicates the degree or the amount to which a person has a given personality or behavior trait. Thus, they serve to objectify our personality estimates or trait ratings. For instance, if we wanted to rate student nurses on some fundamental traits, we might ask three or four of their superiors to place a check on the line indicating where, in their opinion, each student nurse belongs. The customary pattern of a rating scale is as follows:

Poor acceptance and use of suggestions	Accepts suggestions reasonably well	Welcomes and makes best possible use of suggestions
Resents authority; antagonistic to superiors	Adjusts fairly well to her superiors	Coöperates in a cheerful manner with her superiors
Habitually late to classes and other duties	Infrequently late, and then has an acceptable excuse	Punctual in meeting every duty; always on time

By measuring the distance from the left side of the scale and taking the average, the head nurse is able to form a good opinion of the student, at least, how the student is regarded by her superiors.[5]

Check lists are very useful in observational studies of individuals. For example, if the student were interested in making an investigation of the behavior of her patients, she might draw up a list of activities, and then check the frequency of their occurrence. Questionnaires are really printed interview questions, which the recipient is supposed to fill out. Some of the questions which are commonly asked in a psychiatric examination have been carefully edited and printed. The subject is expected to answer each question by checking *yes, no,* or *?*. Then, by counting the number of "wrong" answers, the investigator obtains a score which may indicate the degree of maladjustment of the individual. Questionnaires are also used to obtain statistical information, to collect data regarding beliefs and attitudes, to inquire into the interests and preferences of people, and to serve a variety of other purposes.

Rating scales and check lists are useful devices for making objective studies of the behavior and the personality traits of other persons. Of course, they may also be used in self-study. A useful exercise is to give oneself a rating scale, and then to evaluate the results carefully. By making a check list for the study of how we spend our time, we might find out how many hours we are in the habit of wasting each day. Questionnaires are rather uncertain instruments. Many times they are filled out in a casual or flippant manner; oftentimes they are tossed into the wastebasket; and only seldom are they answered in a scientific, objective manner. At the present time, they are used with less frequency than formerly; and yet there are certain types of data that can be gathered in no other way.

Psychological and educational tests.—Through the use of carefully devised tests, psychologists are able to measure talents, achievement, intelligence, and progress. In addition, they are able to find out the specific difficulties of people, especially in relation to their mastery of school subjects, and

[5] See Chapter x and Appendix.

thus to plan remedial programs. Literally thousands of psychological tests are now on the market. There are tests which measure the educational status of an individual, his likelihood for success in art or music, his aptitude for law or medicine, his honesty, and his chances for success in learning a foreign language. In fact, there is scarcely a trait or characteristic of behavior for which a test has not been devised. Many of these tests are, of course, still crude and imperfect. Others, especially the measures of intelligence, are fairly scientific and accurate. When good tests are used and the results interpreted by a competent psychologist, this method is exceedingly useful. Obviously, many tests have been hastily constructed, they are given imperfectly, and the results are incorrectly interpreted. With such procedures the qualified psychologist takes strong exception.

The clinical and case history method.—Clinical studies usually include a carefully prepared case history, full reports of interviews and visits to the home, the results from psychological tests, a diagnosis of the personality difficulties of the individual, and some recommendations for the improvement of the individual's status. By assembling a great deal of relevant data, the psychologist may be able to make valid inferences about the nature of the person's difficulties and problems, their probable origin and course of development, and the proper course of action to pursue in helping the individual. Under such conditions, the case history and clinical procedure become somewhat like an experiment.

A common error in case histories and clinical studies is to draw hasty inferences from a few data and to set arbitrary criteria for the interpretation of the findings. For example, many social workers seem to have no adequate understanding of the normal personality; hence they tend to overemphasize certain aspects of the case history findings. If, for instance, they discover that the parents of a delinquent adolescent have separated or are divorced, they sometimes attribute the youngster's social maladjustment to a broken home situation. As a matter of fact, many children from broken homes turn out very well; and, at any rate, some other factor may have caused the delinquency. Nevertheless, intensive studies of the personality development of individuals, when scientifi-

cally undertaken, constitute one of the most valuable methods in psychology. Whereas laboratory experiments often deal with isolated aspects of behavior and with artificial situations, the case history and clinical method undertakes the study of the individual as he or she has developed in the community setting.

The trend from armchair theorizing to scientific methods. —Whereas the old philosophers speculated about the nature of mind and behavior, the modern psychologist uses the methods of science. He employs many procedures to gather the data, some of them being the standard methods used in other sciences, and some of them being ingenious procedures which are devised especially for the collection of the data of psychology. In all cases, he attempts to be objective, impartial, unbiased, and accurate in collecting, classifying, and interpreting the data. With armchair theorizing and with generalizations which are not based upon observable evidence, modern psychology has nothing to do. The only peculiarity about the use of the scientific method in psychology is that certain data are not directly observable by another person, and hence that these data have to be observed by the method of introspection. Nevertheless, even these subjective observations, when repeatedly made by large groups of trained introspectionists, become scientifically valid and verifiable. In general, however, the modern psychologist favors the use of objective observations, since it is much easier to repeat these procedures and thus to verify the inferences.

Psychology as a Science [6]

Thus the content of modern psychology consists of a body of knowledge about human nature that is based upon accurate observations, arranged in an orderly fashion, subjected to verification by many other observers, and expressed as a series of principles which have been carefully tested. It is the most sophisticated of all the sciences, since it represents

[6] For an excellent and readable account of the scientific method, see J. A. Thomson, *Introduction to Science* (Holt, 1911).

For an account of the place of psychology in relation to the other fields of science, see C. R. Griffith, *General Introduction to Psychology* (Macmillan, 1928), Chap. i.

mankind's effort to apply the scientific method to a study of the activities of the mind itself. It is a sophisticated field of knowledge also for the reason that it attempts to investigate the total behavior of individuals. Many people who have never made a serious study of psychology have the opinion that there are a few broad principles or laws which will account for all the complexities of human behavior. One of the most interesting and challenging aspects of this science is that human beings are infinitely complex and that it is impossible to present an oversimplified account of their motives, feelings, and behavior. Nevertheless, the enormous complexity of this field does not deter the inquiring student from using the methods of science in order to understand it.

QUESTIONS AND EXERCISES

1. What are some of the important reasons why people want to become nurses? Is it possible to be mistaken about our reasons for choosing a given vocation? Do all people have the same reasons for going into training for the nursing profession? Explain and amplify your answers.
2. List some important traits which a nurse should possess. What traits might be developed by an ambitious student, and what ones seem to be impossible to acquire?
3. Why does the nurse have to possess a good knowledge of human psychology? Does she require a better understanding of psychology than a teacher or a salesman does? Can this knowledge be "picked up" through experience? In what ways might "common-sense psychology" be fallacious and harmful in personal relationships? Explain.
4. Without using names or revealing identities, write out a concise description of a good nurse and of a poor one. What are the characteristics in which they differ? Could the poor nurse improve herself? How? Do you believe that good nurses are "born"? Do you believe that inefficiency, untidiness, unpunctuality, irresponsibility, and selfishness are inherited traits? This question should be answered in detail.
5. Is it true that the study of psychology "makes people morbid"? What sort of psychology do you believe that people have in mind when they make such a statement? Is their opinion about the subject matter of psychology a correct one?

6. Look up the word *psychology* in an unabridged dictionary and in the New English Dictionary. What is the etymology of the word? How has it been defined at various times in history?
7. What practical help can a student get from psychology? Give some specific examples of what you expect to derive from this study.
8. Give some examples of problems that lie within the field of psychology. Tell what methods would be appropriate to use in investigating them.
9. It has been said that the unity of science lies in its method. Explain this statement. Can the scientific method be applied in any field? Explain. In what fields has it been used with the greatest success?
10. Is there any aspect of the human being that cannot appropriately be studied from the scientific point of view? Is it true that when we apply the scientific method to the study of human behavior we imply that human beings are nothing more than pieces of mechanism?
11. Write a case history of someone whom you know to be badly adjusted. Do not reveal the identity of your subject, but try to show exactly what influences warped his or her personality. How would a knowledge of psychology enable you to reëducate such an individual?
12. From your reading of some of the references at the end of this chapter, give a brief account of what psychology is. How does it differ from physiology? from sociology? from psychiatry? Are you clear in your understanding of what psychology is and what are the limits of its field of study? Explain in full.
13. Which of the following basic personal requirements do you possess: good health, intelligence, ability to get along with others, self-reliance, self-control, tact, kindliness, sympathy, sense of humor, dependability, adaptability, ability to follow directions and to keep professional secrets?

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CHAPTER II

THE BEHAVING ORGANISM

The Nature of the Human Being

One of the essential characteristics of all living organisms is that they are in a state of continuous adjustment. Once the maintenance and adaptive functions have ceased, the organism is no longer alive. Hence, from birth until death the human being is never at two successive moments quite the same. Some of the changes are rather simple to understand, since they are readily observable. The physical development of the young child, for instance, may be objectively recorded from week to week, and the physiologist is able to measure the rate of change in digestive or respiratory functions. Other changes are more subtle and elusive. For example, the trained psychologist would encounter a great deal of difficulty in making an objective record of the growth in his experience which supervenes from the experiences of each succeeding moment. Yet the fact remains that incessant change is one of the most obvious characteristics of the human being, and that, whether we study human physiology or human psychology, this fact must be recognized.

Four important factors determine the rate and the quality of these changes: heredity, environment, physical condition, and experience. The influences of each of these factors upon the individual will be discussed in some detail later in the chapter. At this point, however, it is necessary to emphasize the truth that the young child is not a miniature adult. To be sure, in the Middle Ages the child was dressed and educated as though he were a small replica of an adult. Modern psychology has, of course, exploded this myth. It is obvious that no teacher, no matter how gifted, can succeed in teaching algebra to a child who is two years of age, nor can the youngster repair a radio at this early age. It is less obvious,

however, that the motives, the background of experiences, and the interests of a child differ markedly from those of an adult; hence, until recent years, children were subjected to educational procedures which must have made their lives miserable. The harmful effect of heavy manual labor upon the growing child was also overlooked, owing, no doubt, to a lack of scientific medical knowledge and to the greed of employers. In short, one of the most important outcomes of modern child psychology and of pediatrics is the improvement of the lot of the child.

In the early days of infancy the human being has a simple repertory of responses. First of all, the newborn child is capable of performing such necessary physiological activities as sucking, breathing, elimination, and crying. At about fifteen days the infant can follow visually some brightly colored papers moved before its eyes. Even on the second day of postnatal life some infants will make defensive movements when an experimenter pushes gently on their chins. Thus the listing of simple adaptive responses might be continued, but that interesting topic would lead us afield in our present inquiry.[1] The point to note is that even in the earliest days of infancy the human being does not start at "psychological zero." Very shortly the youngster begins to grow in experience. For example, some parents have observed that in the first month or two of life their infants seem to have learned that prolonged crying will bring some one to attend to their wants. In fact, there is good scientific evidence to support the assertion that human beings can learn as early as the tenth day of life.

Throughout life, therefore, there is a continuous process of change. The intrusive fact is that infancy and childhood are periods of growth and that old age is a period of decline.[2] We must resist the temptation to mark off "stages" of growth and decline, however, because we do not want to

[1] The following books by Gesell contain excellent summaries of the facts about early growth: Arnold Gesell, *Infancy and Human Growth* (Macmillan, 1928); *The Psychology of Early Growth* (Macmillan, 1938).

[2] For a psychological study of old age, see J. G. Gilbert's "Mental Efficiency in Senescence," *Archives of Psychology*, CLXXXVIII (1935). A close reading of *King Lear* will amply repay the student of psychology, since the King exhibits many of the characteristic symptoms of arteriosclerosis.

suggest that one period is sharply differentiated from another. There is no "point" where the child comes into being and the infant ceases to exist. On the contrary, the human being is an organism with a continuous history from birth until death. Likewise we must face the necessity of taking into account the subtle interrelationships of two types of growth and decline: the physical and the mental. Fortunately, as students of psychology, we do not have to face the insoluble body-mind problem, the shoal upon which many systems of philosophy have been wrecked. Physical growth and decline determine the quantity and the quality of mental activities. For convenience we shall employ the term *growth and decline in experience* to refer to the incessant changes which are commonly referred to as *mental.* As a matter of fact, most psychologists regard physiological and psychological activities as essentially the same, though different terminology is employed in each field.

One of the most important characteristics of the organism is that it adapts itself to its environment or it perishes. The more complex the environment, the more involved are the adaptations which must be made. Thus, the human infant has a relatively simple environment, in which the basic physiological drives are the important determiners of behavior. In a short while, however, the infant learns to want its mother and its favorite playthings. With the passing of years, the child acquires an infinite variety of desires; and hence the problem of effecting a satisfactory adjustment becomes increasingly more difficult. Remember also that the environment itself is in a constant state of change. The human being develops from a stage where its internal chemistry and the most simple phases of the environment (such as uncomfortable clothing or an open safety pin) are obstacles to satisfactory adjustment, to a point where degrees, better salaries, or assurance of immortality are the things-hoped-for.

The "toddler" gets many bumps as he perfects his skill in walking, but shortly he learns to climb the stairs without a tumble and to lift his feet in crossing thresholds. Not only does he become a more proficient walker because of his increase in physical development, but also he learns from former experiences. A family living in the Dust Bowl may

decide to move to a more fertile part of the country, and thus they encounter a great many difficulties in learning how to make the proper adjustments to their new home. If the wage-earner has to find some new field of employment, he may have extreme hardships in learning a different vocation. Upon recovering from a heart attack, the patient may be advised that henceforth he must radically change his mode of living. Here, then, are a few common illustrations of adjustment difficulties. Some adjustments are rather easy to achieve; others are hard. Think, for instance, of the adjustment problems of a young mother who has just lost her child or of a person who has just learned that trusted friends have betrayed her confidence.

The amazing truth is that human beings are capable of making adjustments to extremely difficult problems. A person who has a good heredity and who enjoys good health may be able to endure disappointments which might wreck some people. Even in the most unpromising environments, such as the Australian bush or the swamps of Africa, human beings have made surprising adjustments, and they maintain their existence generation after generation. Because of their ability to think or to solve problems, human beings are not made helpless by forces stronger than themselves, but they are able to effect purposeful adjustments as the need arises. Some individuals, of course, are incapable of achieving satisfactory adjustments, and their personalities are wrecked. Thus they become the beneficiaries of care and protection in a civilized social order. When their adjustment difficulties are not extreme, they may be "just miserable," "misunderstood," or "eccentrics." In a later chapter, we shall consider some of their problems in greater detail.

To recapitulate, we have noted that life is a process of continuous adjustments to an ever-widening environment. At the outset, the adjustments are relatively simple and easily achieved; but with the passing of the years the human being increases his wants, and hence complicates his adjustment difficulties. Whereas the hungry infant is frustrated by lack of food at the moment, the adult is blocked by the complicated laws of society and by opposing wants in effecting a satisfactory adjustment for some of his keen desires. Be-

havior is purposive in the sense that it is directed towards the attainment of a satisfactory adjustment to the environment. The efficiency of the behavior, however, depends upon the age, the heredity, the past experiences, and the present situation of the person. Thus, behavior is by no means a product of the moment; it is the result of many factors, past and present, acting together. In other words, we can never understand a person if we know only "how he acted"; we must know what determined him to act that way. We need to understand his physical condition and the whole background of his experiences. Since these are the result of the interaction of many complicated forces, scientific psychology can offer no glib solutions to the riddle of personality. By patient, intelligent application of the scientific method, however, a great deal of valid knowledge about human behavior has been developed.

Factors Influencing the Development of Behavior

Biological heredity.[3]—At the beginning of life each human organism is a single cell, the result of the fertilization of an ovum by a spermatazoon. From this single cell, to which each parent contributes, the human being is developed. It would be an egregious blunder to assume that development is a process of "unfolding" which takes place in the single cell. As a matter of fact, of course, the cell multiplies into highly specialized groups of tissues, through an intricate series of growth processes which occur during the prenatal period. These processes are the result of two complex interacting factors: the environment, which is supplied by the mother's body; and the hereditary determinants, which lie within the chromosomes.

This cell, with which a human being commences life, contains twenty-four pairs of chromosomes. Half the chromosomes have been contributed by the mother (through the ovum) and half by the father (through the spermatazoon). Within the chromosomes lie the genes, half of which, of course, are contributed by the male parent and half by the

[3] The mechanisms of biological heredity are simply and clearly explained in H. S. Jennings, *The Biological Basis of Human Nature* (Norton, 1930).

female. Before fertilization occurs, an alteration takes place in the ovum and the spermatazoon whereby the number of chromosomes is reduced by one-half. Thus, a sperm cell of twenty-four chromosomes is united with an ovum of the same

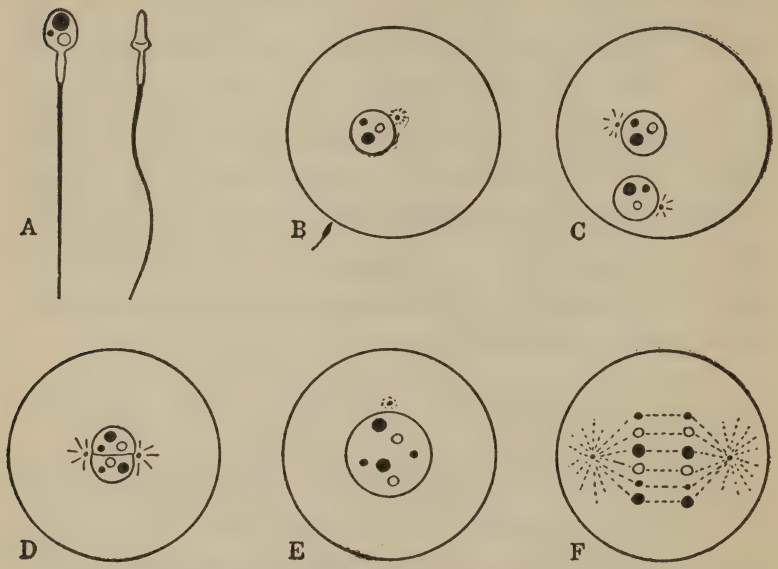


FIG. 1.—DIAGRAM TO ILLUSTRATE FERTILIZATION OF OVUM BY THE SPERMATAZOON. *A,* human sperm cell, face and side views. Note the head containing the chromosomes, the middle piece and the tail. *B,* sperm entering ovum. *C,* sperm nucleus within ovum, showing chromosomes. *D,* the sperm nucleus approaches the ovum nucleus. *E,* the two nuclei fuse and fertilization is complete, the zygote formed in *E* has six chromosomes—two pairs of autosomes (black) and one pair of sex chromosomes (white). Since the two sex chromosomes are alike (*x* chromosomes), the zygote would develop into a female. *F,* first embryonic cell-division which when complete would give a two-celled embryo. (Modified from *Essentials of Human Embryology,* G. S. Dodds. Courtesy of John Wiley & Sons.) From D. C. Kimber, C. E. Gray and C. E. Stackpole, *Textbook of Anatomy and Physiology* (New York: 10th ed., The Macmillan Co., 1938), p. 27.

number; hence the germ cell contains forty-eight chromosomes, or twenty-four pairs. Consequently, chance plays a great part in determining the combination of chromosomes, and hence of genes, which are inherited by the offspring. An important point to note is that no more hereditary deter-

minants can enter the germ cell; once the ovum has been fertilized, all the inherited factors are set.

In a biological sense, therefore, the human being inherits nothing more than the two sets of chromosomes, and the genes [4] which lie within them. An innumerable, chance array of chromosomes and genes may result from the fertilization. The only human beings who receive exactly the

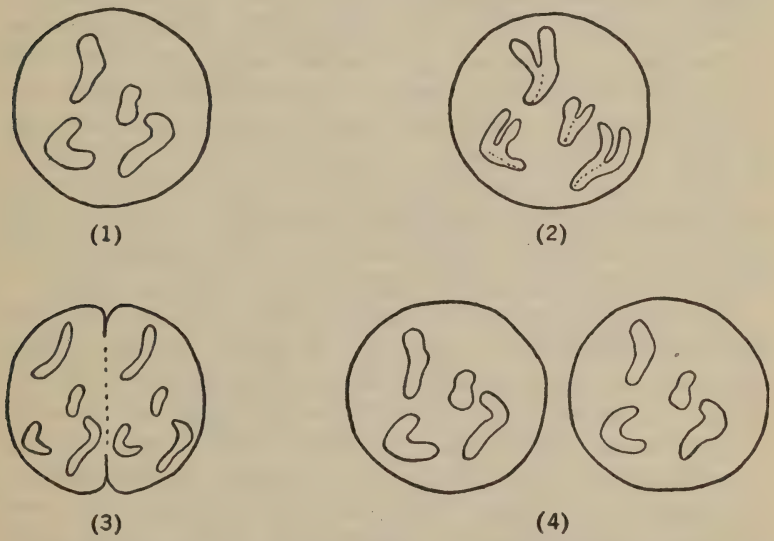


FIG. 2.—DIAGRAM OF CELL DIVISION OF A FERTILIZED OVUM. The fertilized ovum cell contains 48 chromosomes but only 4 are shown in this diagram for simplification. (1) is the original cell containing the full quota of chromosomes. In (2), the chromosomes begin to divide lengthwise. (3) shows the complete division of chromosomes, half of which move to one side of the cell, the remainder to the other side as the original cell prepares to divide. In (4) cell division has been completed. There are now 2 cells in the place of one, with the same number of chromosomes as in the original. From A. Sheinfeld, *You and Heredity* (New York: Stokes, 1939), p. 12.

same heredity are identical twins. Of course, offspring of the same parents are far more likely to have close resemblance to one another than people who have different parents. Even in the same family, however, the hereditary

[4] The theory that heredity is governed by extremely small particles called genes is not accepted by all geneticists. These critics of the gene theory consider the chromosome to be the unit of heredity.

determiners often produce striking differences. The obvious reason is that each individual has a unique combination of genes.

It is impossible to predict just what characteristics an infant may inherit from the parents. Not only does the individual inherit half its genes from each parent, but the parents themselves are the result of heredity. Hence, of course, each of them inherited half of their genes from each of their parents. Thus the influence of heredity may be pushed back into remote generations long since dead; and yet the influence of these genes, in a combination determined solely by chance, is the potent factor in the unique heredity of each individual. Since a normal set of genes tends to carry the burden of development, its opposed set may have the potentiality for some gross abnormality. This trait is said to be recessive. By chance it may be matched with a similar set of genes, and thus the defect is made to appear.

The influence of various combinations of genes has been carefully studied in the fruit fly, an insect that has a brief life span and hence quickly illustrates the factors of inheritance. It is known that about fifty pairs of genes are involved in producing such a relatively simple trait as eye color in this insect, and that hundreds are involved in determining the shape of the wings. For that reason, we must not conclude that inheritance is a simple affair which can be easily worked out. To illustrate the complexity of this topic, it may be stated that the unlikelihood of an individual resembling a recessive grandparent is one in four on a single pair of factors, but one in 1,099,511,627,776 where twenty pairs of factors are involved.

One of the interesting problems which often confronts nurses and teachers is to understand why intelligent parents have a stupid child, or why a bright youngster may be born to dull parents. If one clearly understands the mechanisms of heredity, this riddle is not hard to solve. The bright parents may carry the potentialities for stupidity as recessives. By chance, each parent may contribute these genes to their offspring; hence the recessive trait comes out. The dull parents may be defective because of different sets of genes. That is, the deficiency of the father may be due to one set of

pairs of genes, and that of the mother to a set differently situated. The offspring, in that case, could not be defective, though they would be very likely to carry the possibility of transmitting the defect. Since the genetic constitution of each parent is unique, the chances are that the offspring will not exactly resemble either parent, but that its resemblance to parents will be closer than that to unrelated individuals.

This discussion may be conveniently summarized by a few simple diagrams. Assume that Mr. A has the following genes and that Mrs. A has another set:

Mr. A		Mrs. A	
x x x x x x o o x	(*a*)	o x x x o x x x x	(*y*)
x o o o x x x x o	(*b*)	x o x o x x x x x	(*z*)

From the foregoing discussion it should be evident that Mr. A inherited from his father set (*a*) and from his mother set (*b*). Similarly, Mrs. A obtained (*y*) from her mother and (*z*) from her father. Now assume that *o* represents a recessive characteristic, which is concealed because *x*, the normal gene, carries the burden of development. Their offspring might get the following genetic constitution:

From Mr. A —x o o o x x x x o
From Mrs. A—o x x x o x x x x

or

From Mr. A —x x x x x x o o x
From Mrs. A—x o x o x x x x x

In neither case, therefore, would the offspring be abnormal, though it would carry the potentiality of transmitting these defects. Assume that intelligent parents have the following genes:

Mr. C	Mrs. C
x o o o x x x x	o x x x o o o x
o x x x o o o x	x o o o x x x x

In either case the offspring would be defective, with one of these constitutions:

x o o o x x x x	or	o x x x o o o x
x o o o x x x x		o x x x o o o x

Next, assume that two people have marked defects attributable to heredity, but that they have children who are normal. This situation might occur if the parents had genetic constitutions represented schematically as follows:

Mr. D	Mrs. D
x o o o x x x x x	x x x x o o o o x
x o o o x x x x x	x x x x o o o o x

Their children, obviously, would carry the defect (or defects) as recessives, and inherit this type of constitution:

x o o o x x x x x
x x x x o o o o x

Of course, these diagrams are altogether too simple adequately to represent such a highly complex affair as human heredity; but they may serve to illustrate some of the basic principles if they are not taken too literally.

Social heredity.[5]—Every child is born into an environment, and even at the outset of postnatal life environmental influences have a potent effect upon development. If, for example, the parents are unable to pay for proper medical attention or to purchase suitable foods, the physical growth of their children may suffer. An extensive study of eminent men and women has revealed the fact that most of them were born into comfortable economic circumstances and that their parents had a good status in the community. Many of the major problems of adjustment and behavior are closely related to unfavorable environmental conditions. In recent years a great deal of attention has been directed towards the need for improved housing conditions, better educational facilities, playgrounds and supervised recreational activities, and community health. It is evident that nothing can be done to alter the heredity of people who are now living; hence enlightened teachers, social workers, and nurses are trying to arouse the public to the immediate task of improving the environment of boys and girls.

Some children are born into intellectually impoverished environments. In their communities there is no tradition of self-improvement, and hence they have small incentive to make the most of any opportunities which may be available. Some neighborhoods are crime areas, and many children grow up there with antisocial attitudes. The program for

[5] An excellent reference on the importance of social heredity and environmental influences is the following: S. L Pressy, J. E. Janney, and R. G. Kuhlen, *Life: a Psychological Survey* (Harper, 1939). Many of their conclusions are based upon the 1930 Census, but most of the generalizations are still valid.

improving the social heredity and the environment of boys and girls is known as euthenics. By many uninformed people this program is misunderstood. It definitely does not assume that children with a subnormal biological heredity may be raised to the level of normal or superior. On the contrary, every educated person recognizes the importance of biological inheritance, and realizes that a given individual cannot transcend the limits set in his genetic constitution. The euthenicist, however, believes that many boys and girls never have a chance to achieve their biological potentialities. Malnutrition, bad living quarters, lack of medical and surgical care, neglect of dental needs—these are a few factors which may exert a profound effect upon physical development. Likewise, poor schools, no playgrounds, absence of library facilities, and unwholesome cultural influences are some of the environmental factors which may stunt intellectual development. These situations the euthenicist would correct.

No one doubts that the following characteristics are the result of biological heredity: sex, skin color, eye color, polydactylism, specific blood types, hemophilia, color blindness, and various morphological traits, such as height, length of limbs, or shape of nose. This list of traits might be extended to a considerable length. Other traits, however, are sometimes confused with the inherited characteristics; hence, by specious reasoning, they, too, are thought to be the result of biological heredity. Such traits as meanness, generosity, tolerance, prejudice, persistence, feelings of personal inadequacy, and ambition are acquired in the life experience of the individual. Biological heredity has little to do with establishing them; social pressures and experiences are the primary factors. An individual does not inherit criminality, for example; this trait is acquired.

Can acquired traits be transmitted to offspring?—At one time scientists believed that the psychological traits of parents were transmitted, along with the determination for physical traits, in the germ plasm. An eminent French biologist, Lamarck, advocated this notion; but Weissmann seems to have disproved it. Musical knowledge or skill, athletic prowess, maladjusted habits, and ambition—these traits are

examples of a great number which are *not* acquired through biological heredity. On the other hand, they may be, and often are, transmitted through social heredity. Little or no evidence exists to show that traits acquired in one generation can "enter the germ plasm," and thus be passed down from parents to offspring. The prevalent notion that such is often the case is generally the result of a failure to distinguish between biological and social heredity. There is growing and substantial evidence, however, that environment can influence heredity in some of the lower life forms.

Environment and heredity.—The old argument as to the relative importance of heredity and environment is still with us. It is a false, academic problem, not a real one. To argue the question is almost as futile as arguing whether the seed or the soil is the more important for the growth of a plant. If there were no seed, there would be no plant; if there were no soil (or chemical environment), there would not be any plant either. Heredity *and* environment work together; and there is an interplay between the genetic (internal) forces and the environmental forces. Thus, behavior is not a matter of *either-or*, nor of heredity *plus* environment, but the result of both factors functioning together. Unquestionably, heredity sets the limits for development, though to what extent has not yet been determined; but environment must supply the opportunity. Many capacities seem to be latent and to go unrecognized, unless the environment is favorable to bring them out.

The work of the nurse brings her into touch with people who have already been born. Their heredity has been determined, and the nurse was not consulted as to the wisdom of bringing about their birth. Thus, it is rather futile for a nurse, a teacher, or a social worker to become excessively preoccupied with theoretical aspects of heredity. We have to do the best we can with human beings as they are. We are certain that proper food, sensible habits of hygienic living, and good neighborhoods will improve the status of children. We know also that a child who grows up in a wholesome, well-adjusted home has a great advantage over a youngster whose home is marred by quarrels and dissension. Furthermore, we realize that pleasant, harmonious surround-

ings often do wonders in transforming a warped personality into one that is well adjusted.

Cultural influences.—A great many of the differences among human beings may rightly be attributed to cultural factors. *Culture* is used here in a broad connotation; it includes every social influence which is brought to bear upon the individual. Groups, and individuals within groups, differ in their mannerisms, accents, gestures, interests, and general deportment. These differences are the result of cultural influences. To people of a different cultural background, the customs and manners of another race may seem to be strange, fantastic, or curious. Even within the same country there may be many diverse cultural influences; hence the people of one region speak with a different accent and have a different set of habits from those in another region.

For example, the customs about the rearing of children are not the same in all lands. Klineberg [6] reports that among the Andaman Islanders it is unusual to find a child of six or seven years of age still living with its parents. It is, in fact, a mark of etiquette and a sign of friendship for a married man to offer to adopt one of his host's children, whom he cares for and rears as though it were his own son or daughter. On the Island of Merlav a child may belong to the first tribesman who plants the leaf of a cycas tree before the door of the house in which the child was born.

In various cultures there are ways of settling disputes which are interesting because they differ from our way. Instead of having a fight or going to law, the Indians of Santa Marta, Colombia, hit a rock or a tree with a large stick. At the same time the disputants utter insulting remarks about their opponents, who, meantime, are engaged in the same activity. The first to break his stick is declared the victor. Then they embrace, have a drink together, and become friends once more. How different from the way we settle our quarrels!

The rôles assigned to women seem to be the result of cultural factors. It is interesting to note that among the primitive Arapesh, both the men and the women are non-

[6] O. Klineberg, *Race Differences* (New York: Harper, 1935), pp. 258, 266, 303.

aggressive; among the Mundugumor tribes both sexes are ruthless and aggressive; but among the Tchambuli tribe the women are the aggressive sex, and men are dependent and submissive. Every informed woman is aware of the long struggle which her sex had to make to escape from the rôle assigned to it in our traditional culture. The first women who sought for higher education were ridiculed and socially ostracized; man assumed that he alone was worthy to use the ballot; and a married woman lost all rights to any property she may have possessed.

In innumerable ways the culture into which one is born may shape the personality and determine the behavior of the individual. Even moral and ethical judgments are largely determined by the culture of the group. At one time human slavery was considered to be divinely sanctioned. Persons who were demented were thought to be witches. Many human differences are, in short, the sole result of differences in the culture of the social order in which they occur.

The influences of social institutions.—The most important, and certainly the first social institution to influence human behavior, is the family. Since the early years of a child's life are the most formative of the entire life cycle, the importance of the home can scarcely be overemphasized. Maladjusted or broken homes often produce disastrous consequences in the behavior and personality of the child. Many times the parents, thoughtlessly or deliberately, set unfortunate examples for their children. In fact, one of the poorest types of homes, from the psychological standpoint, is a home in which the parents pass on the burden of their own maladjustments or disappointments to their children. Furthermore, the establishment of proper health habits depends almost entirely upon the home. Obviously, the instructions given in a health-education class at school do not carry over into the life of the average child unless the home coöperates. It is no surprise to the school nurse to find that some parents do not even teach their children to brush the teeth; hence there are toothbrush drills in many schools. In some homes there is ignorance of the basic principles of dietetics.

Religious beliefs are also important determinants of per-

sonality development. Sometimes, when theological views are emphasized, unfortunate conditions ensue. We have only to recall the pages of history to see how religious intolerance has led to bitter conflicts. One of the most difficult situations for a child is to come from a home in which the parents are the members of an eccentric religious group or a minority group. On the other hand, a wholesome religious upbringing is an invaluable influence in the life of the child. Fortunately, church leaders now recognize the importance of a sound program of religious and ethical instruction for all children.

Radio programs and motion pictures have a great influence upon personality and character development. Informational and propaganda radio programs help to shape public opinion, and they probably have a much greater influence than the newspapers in this respect. It is obvious that styles of dress, fads in popular songs and mannerisms, standards of living, and many attitudes are formed by the motion pictures. It is likewise apparent that reading materials are a potent molding force. Probably, however, the great majority of adults do not come into contact with the best type of printed material. Hence their outlooks upon life are fashioned by the cheap and tawdry materials often found in the sports pages, the comic sections, or pulpwood magazines.

One of the most important influences in shaping behavior is the spoken word. Before the infant has acquired the ability to make meaningful sounds, its contact with the social environment is exceedingly limited. Once the vocabulary begins to develop, however, its mental growth seems to go ahead rapidly. Through the printed page, the young child widens mental horizons, obtains new insights, and develops interests. Without language, human society would hardly exist at all. The use of numbers to represent various aspects of the environment marked a great advance in social development. Now we are so much accustomed to employ speech, writing, and numerical representations that we cannot conceive of a time when mankind was unacquainted with them. Through these important influences—speech, writing, and numbers—society has been able to make great advances. We often forget that the young child falls heir to the ac-

cumulated knowledge of centuries of slow advance in understanding, and that by becoming acquainted with this heritage he becomes socialized.

The influence of health on behavior.—A nurse has only to observe her patients to see how much behavior is altered when the body is in an abnormal condition. Indeed, a little retrospection shows us that we are "not ourselves" when we are ill. A great many factors may be responsible for producing temporary or permanent dysfunctions in behavior. For one thing, the diet may be insufficient or deficient in food values. Upon the functioning of the endocrine glands are dependent such things as height, weight, and development of the secondary sex characteristics. Hence if these glands do not function normally, there is likely to be a pronounced effect upon the growth and the behavior of the individual. The presence of toxins and infections lowers the resistance of the person; thus, there may be a great sense of fatigue or the occurrence of superimposed infections. Brain injuries at birth often seriously affect the mental development of a child. During the years of adult life, various illnesses, some of which may go undetected for years, interfere with the attainment of normal behavior.

If the face is disfigured, if there are gross deformities, or if there is a great sensory handicap, the individual may be unable to lead a happy social life. Perhaps an exaggerated self-consciousness may be the result of some physical abnormality, which seems to attract unfavorable notice from other people. It should be made clear that there is probably no primary relationship between the body and the personality of the individual. The way the individual, and especially the way other persons, react towards the body is, however, an important influence on personality. During childhood, the youngster who has any noticeable abnormality is often made the butt of unsympathetic comments; and these experiences sometimes warp an individual for life. Many individuals have found a real challenge in trying to overcome some of these personal defects by finding substitute outlets or even by a determination to succeed in the very field in which their defects might be considered an insurmountable obstacle.

Learning, formal and informal.—Learning, of course, is a potent factor in shaping the personality and the behavior patterns. Sometimes people think of learning as something which takes place only in a classroom and under the direction of teachers. To be sure, the school is an institution that is specifically concerned with imparting certain types of learning. The curriculum of the school might be considered as a sort of formalized, pre-arranged situation in which the learner is much more likely to develop efficient habits and proper understanding than he would if these matters were left to chance. The school is a place where formal learning goes on. The most crucial experiences in a person's life may happen off stage so far as the school is concerned. What is called informal learning, for want of a better term, is oftentimes much more influential in determining an individual's personality and behavior than is the school. All the instructions which are given in school may be nullified by the experiences which the pupil has with his playmates or in the home. The influences of out-of-school learning should not be overlooked as important factors in the education of the individual.

Purpose as a determinant of behavior.—As children grow up, they begin to establish certain goals towards which they direct their energies. Sometimes it is much more important, in understanding a person, to find out what goals he is striving for than to explore into his past experiences. At least, this is the opinion of psychiatrists who accept the theories of Alfred Adler. A student of nursing, for instance, may fail in her program, not because of lack of intelligence, but because of inadequate motivation to study. Interests, ambitions, and purposes produce striking individual differences. By no means do all these goal-strivings have the same value. Some are wholesome and desirable; others are low and selfish. By voluntary choice the individual may set these standards at a high level, or he may choose to establish low ideals. Since human beings are capable of creative thinking, each person may devise goals which are not like those which any other person has set up. The nature of the goals is not limited by the present environment. Through the exercise of imagination, intelligence, and reason, mankind may set as

its goal escape from ignorance, poverty, social injustice, war, pestilence, and superstition.

Of course, it is important for each person to realize that he has certain limitations as well as capabilities. Potentialities should be discovered and developed. On the other hand, it is futile and disappointing to attempt to reach lofty goals when the individual lacks the capacity for growth in a given field of endeavor. Some handicaps may be overcome; others cannot be transcended. In setting one's life goals, therefore, it is necessary to take a realistic view. On the other hand, although heredity is an all-important influence in determining the limits of development, no one yet knows to what extent the normal individual may be lifted through an enlightened program of medical care, educational opportunity, and favorable chance to find a useful place in the world.

Growth and Developmental Processes

Growth in the prenatal child.—As we have noted, the human organism is not contained within the ovum as a miniature form. This development of the tiny human being occurs through a process of cell division, multiplication, and by increase in the size of cells. A single fertilized cell, within the short period of approximately forty weeks, develops into an organism that is made up of countless cells differing in form and function. During the first part of the prenatal period, or the embryonic stage, the cells in the process of division and multiplication become differentiated in structure. Those that form the skin differ from those that make up the brain; and the cells of the eyes or stomach are unlike those of the glands, blood, or liver. This differentiation is due to a particular kind of cell protoplasm which is capable of developing in diverse ways, depending upon its environment. Some cells are on the outer surface of the body, and their structure will be different from those inside. Some are more crowded than others; each receives variable amounts of nourishment. Experiments have shown that during the early stages of embryonic development, cells can be transplanted from one part of the body to another, whereupon they will develop into the same structure as other cells

of their new environment. This similarity of structure will not develop, however, if complete cell differentiation has occurred. Differentiation of body parts is practically complete by the end of the embryonic period. The fetal stage is characterized by rapid increase in the size of the differentiated cells.

The principal divisions of the nervous system are formed during the embryonic period. The cerebrum takes the lead in relative growth over other parts of the body. This fact accounts in part for the enormous size of the head at this stage as compared to other parts of the body. It is significant

FIG. 3.—FETAL AND EMBRYONIC DEVELOPMENT (approximately natural size). From C. E. Skinner, P. L. Harriman (editors), *Child Psychology* (New York: The Macmillan Co., 1941), p. 34.

that the cells of the nervous system are formed earlier than much of the body structure which it controls. Even at this early stage the nervous system keeps the entire body under control. No body part is allowed to develop independently of another; for the development of certain structures is dependent upon and affects that of others. The human organism, then, is more than the sum of its parts; it is a unit which controls the development of all its parts. The sense organs, being the receptors for the nervous system, develop along with the nervous system and are able to function at the appropriate time.

Behavior of the prenatal child.—Activity of the unborn child is not possible until the necessary neural pathways have been laid down. Early movements are characterized by general rather than local action. A stimulus applied at any part will produce movement of the entire organism. After birth, the parts gradually become capable of independent action, and a stimulus applied to one part will evoke response

from that part rather than from the whole. Behavior follows the same organized course of development as that found in physical growth, insofar as the parts develop from the whole, so, too, do the finer and specific movements develop from mass activity. Since the cerebrum develops first, activity is believed to begin at the head and gradually extends to the extremities.

The neonate (newborn child).—Until birth, the human organism has been wholly dependent upon the body of the mother. Thus, its existence during the prenatal life is that of a parasite. All physiological needs have been met by the mother. The fetus has been protected in an environment of constant temperature; it has been cushioned in a fluid medium. It has not been exposed to such stimuli as light waves or sounds, and it has been unhampered by clothing. After birth, however, everything is altered. Now the neonate has to make a continuous series of adjustments to the environment. In order to receive an oxygen supply, it must breathe; in order to gain nourishment, it must make sucking movements, swallow, and digest the food. After birth, in short, everything is radically changed. The functions which the mother's body formerly performed for the organism the neonate must now do for itself.

By the end of the period of gestation, the body of the organism is developed to a point where various organs are able to start functioning immediately at birth. By no means, however, are all the structures as fully developed as they will be later on. For example, the complete structure of the brain is laid down during the prenatal period, but only the lower centers are ready to function when the infant is born. The centers which develop first are those which are relatively old in the evolutionary sense. These centers control the reflexes and the diffuse movements and tensions which are often called the emotional responses. The higher cerebral functions of the brain are relatively late in developing in the child, just as they were late in appearing in evolution.

Behavior of the neonate.—On the whole, mass activity of the body is still present. When the child is touched the whole body responds; however, specific movements of parts begin to occur independently of other parts. The newborn

is unable to use his muscles effectively because his activity is uncoördinated at this stage of development. However, he is able to perform many activities at birth as breathing, sucking, crying, coughing, sneezing, moving the head, and grasping objects when they are placed in his hands. These activities are regarded as reflexes for they are unlearned, well-nigh universal, and present at birth. Other important reflexes which are indicative of normal neural development are the pupillary, Babinski, and cheek reflexes. If birth has been difficult, these reflexes are tested to determine if there is any damage to the nervous system.

The newborn has fairly active sense organs. During the first two weeks the child reacts by turning its head toward light; it seems to be unpleasant, however, as evidenced by closure of the eyes to bright light. The eyes may function independently of one another at first but by the end of five weeks they become coördinated and the child is able to focus them on bright moving objects fairly well. Nearly all eyes are blue at birth, owing to absence of pigment in the iris. Tears are rarely present during the first few weeks.

Deafness is often present during the first twenty-four hours because of the absence of air in the middle ear. Hearing becomes acute thereafter and response is invariably made to loud noises.

The young infant seems to be indifferent to tastes. Only those substances which are sour, bitter or sweet will evoke early responses. The sense of taste is not well developed until the infant is several months old. The sense of smell, likewise, develops relatively late. In fact, it does not become acute for several years.

Pain is fairly well developed from the beginning but lacks the acuity of later years. We know that temperature sense is present at birth because the child will react to a cold or hot bath.

Even though these sense organs are developed, the newborn cannot interpret the stimuli that reach him. He can see, hear, taste, smell, and experience pressure, pain, warmth, and cold to some degree but there are no meanings associated with the stimuli. The proper meanings are gradually developed as the child gains experience in sensing.

Infancy and childhood.—Infancy is usually regarded as that period between two weeks and eighteen months. During this time the physical and mental development is rapid, but it is obviously continuous with that before birth. This growth is due to the combined hereditary and environmental factors which operate simultaneously, but as the child grows older the environmental factors play even a greater part in affecting his behavior. There is a certain uniformity of growth during the prenatal period, but after birth some parts grow more rapidly than others. During infancy the nervous

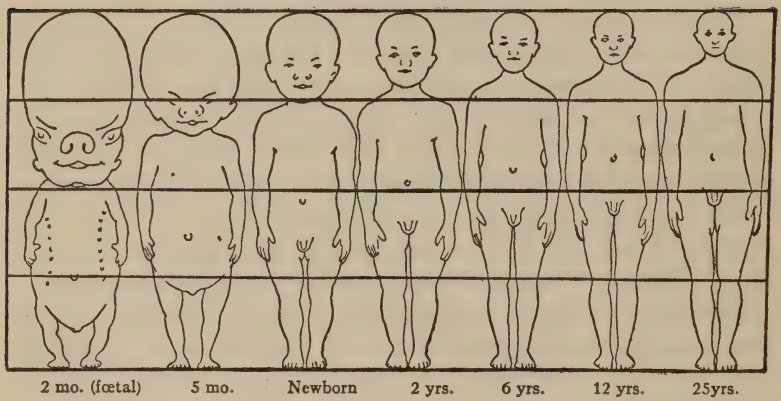
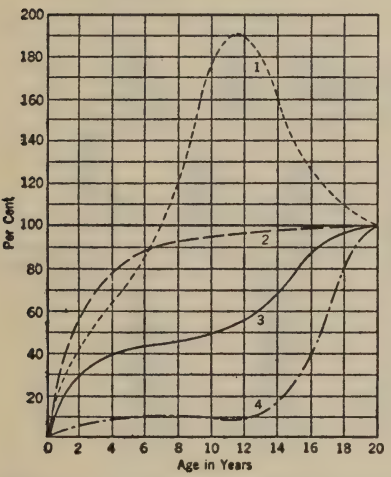


FIG. 4.—DIAGRAMMATIC ILLUSTRATIONS OF THE CHANGES IN BODY PROPORTIONS DURING PRENATAL AND POSTNATAL LIFE. The predominating characteristic during fetal and infant life is the relatively large size of the head as compared to the other body parts. (Stratz.)

system develops most rapidly. Although growth is continuous, there are no sudden changes from one level of development to another. If a young child is observed closely, it is customary to find him doing something new each day. Nevertheless, all growth is of an orderly nature. Each individual has his own rate of growth. Some grow more rapidly and some learn more quickly and continue learning longer than others. Although these rates differ with each child, the general pattern of growth is the same for all.

Infant growth is characterized by the emergence of localized activities from the generalized mass activity. When the infant of a few months is touched, the entire body no longer

reacts; he can move one arm and the rest of the body remains quiet. Many useless and random movements are gradually eliminated. He begins to organize new and complex behavior patterns from the original simple forms. He delights in trying out new activities and applies these to as many situations as he can find. The sound resulting from a spoon against a pan or a glass window are equally pleasing. The discovery of new abilities is enjoyable and these are repeated



Lymphoid Type, 1.
Thymus, Lymph-nodes,
Intestinal lymphoid masses.

Neural Type, 2.
Brain and its parts, Dura,
Spinal cord, Optic apparatus,
Many head dimensions.

General Type, 3.
Body as a whole, External dimensions (with exception of head and neck),
Respiratory and digestive organs,
Kidneys, Aorta and pulmonary trunks,
Spleen, Musculature as a whole,
Skeleton as a whole, Blood volume.

Genital Type, 4.
Testis, Ovary, Epididymus,
Uterine tube, Prostate, Prostatic urethra,
Seminal vesicles.

FIG. 5.—THE DEVELOPMENT OF THE FOUR MAIN TYPES OF TISSUE AND DIFFERENT PARTS AND ORGANS OF THE BODY DURING THE FIRST TWENTY YEARS OF LIFE. From R. E. Scammon, "The Growth of the Body in Childhood" in J. A. Harris and others, *The Measurement of Man* (Minneapolis: University of Minnesota Press, 1930), p. 193. By permission of the publisher.

endlessly. One form of learning grows from the development of another which produces a differentiation of behavior. This learning occurs, not by intention, but by experimentation.

This differentiation of behavior has reached a comparatively high degree of development by school age; and, as a result, the child possesses many skills which he learns to combine in many different ways. Later growth is characterized by an increasing tendency to combine these fundamental patterns into new and complex forms. This trend is

evidenced by the child's desire to do many things for himself. His greater dexterity enables him to fasten his clothes, to draw, and to write. The early attempts to perform these new activities call forth many body contortions. The child learning to write makes many facial grimaces, shuffles the feet, and twists the body in one direction and another. As greater skill is acquired, these useless movements are aban-

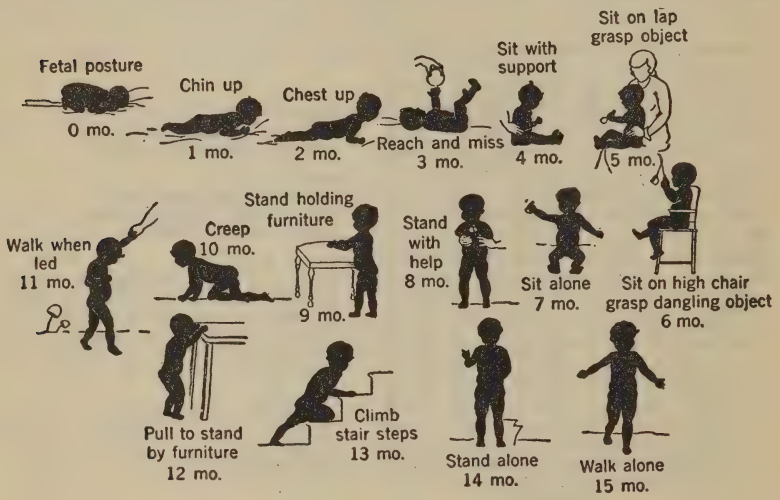


FIG. 6.—THE GENERAL DEVELOPMENTAL MOTOR SEQUENCE. The outstanding behavior characteristics of the infant are shown at the approximate age of their occurrence. These activities develop in this ordered sequence but the age is considered approximate. Each individual has his own rate of development. From M. M. Shirley, *The First Two Years* (Minneapolis: University of Minnesota Press, 1933). By permission of the publisher.

doned, thereby affording a smoother performance with less expenditure of energy.

By the age of six, the child has complete motor control over his body. He utilizes this control in many forms of play and games, for this is a period of great activity. He learns by observation and strives to better his performance over that of others. This intentional learning differs in purpose from the more casual learning of the small child; and much of his subsequent behavior continues to be purposeful or directed toward some perceived end.

Social development of the infant and child.—The social life of a child begins shortly after birth. He learns to react in a different manner to people than to objects. He responds differently to strangers than he does to those whom he has learned to recognize. His responses to children and to adults are of a different nature. Although the development of social insight begins early and in a simple form, it becomes more complex as the child grows older.

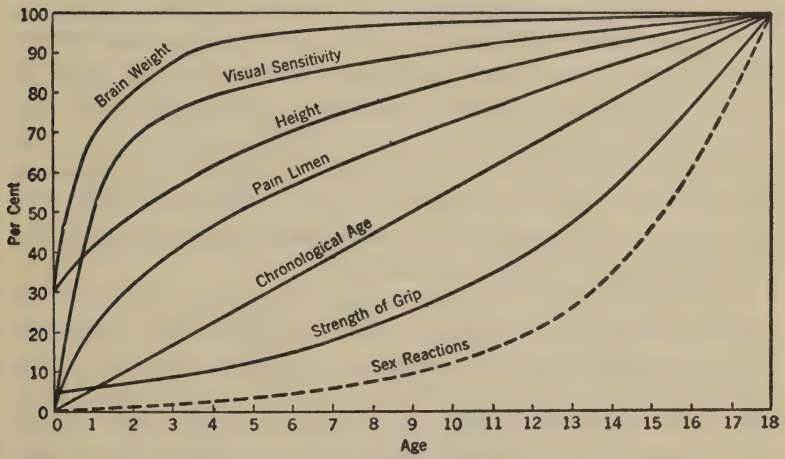


FIG. 7.—VARIOUS CURVES OF GROWTH. The figure indicates roughly the percentage of growth achieved at 18 years which has been completed in earlier years. The curves are only rough approximations; the curve for sex is a mere estimate. From A. I. Gates, *Psychology for Students of Education,* p. 96, by permission of The Macmillan Co., publishers.

Children's reactions differ as markedly as their size or the color of hair or eyes. These reaction differences are due to education and experience. Some children learn early the necessity for coöperation with certain individuals whereas others are slow to learn the desirability and necessity of coöperation. Some get what they want by sulking, crying, or by an exhibition of temper; others discover that they can be more successful if they behave in a more socially approved manner. Some children are overprotected, coddled, and never allowed to develop self-reliance because of parental reluctance to allow the children to grow up. This habitual

physical and emotional dependence upon others produces a shy, timid, and sensitive nature. Children are more likely to become wholesome and well-adjusted adults if they are given in their early years an increasing amount of independence and freedom in making their own decisions.

At first the child's play is independent of others as he succeeds in amusing himself with various objects. By the age of four, other children become an important part of his play activities, but these play groups remain small, usually with only two or three participants. These early social contacts are recognized and desired by the child only as they fulfill his own needs. By school age, however, he begins to identify himself with larger groups; he desires companionship and therefore shuns isolated activity. This development of group consciousness is the result of growth and environmental influences encountered in school life. The child begins to understand that group activity carries more satisfactions than individual activity could ever attain.

This identification of self with the group is attended by certain changes in behavior. The activities and opinions of the group become more important to children of a certain age than adults or their opinions. Adult criticism has little effect but that of the group is a powerful influence. Each member sees himself through the eyes of his associates, and his actions, language, and habits are most likely to conform to those approved by his group. He becomes more conscious of himself than he was at any previous time. Hence he learns to act in ways that make him acceptable and popular with the group.

Development of emotional behavior.—The child learns very early to repeat certain acts that bring about a satisfaction and to avoid those that give dissatisfaction. This learning persists throughout life and plays a great part in adult activity. Usually pain, discomfort, and dissatisfaction create organic tensions which predispose the child not to repeat the behavior which they follow. When the child is uncomfortable, he protests by crying, kicking, and struggling until something occurs to relieve the discomfort. The satisfactions attending this restoration of comfort are significant. As long as they are pleasant, the child generally will make

subsequent efforts to have them repeated. A small child enjoys being picked up and cuddled. If this is repeated each time he cries, he soon learns to repeat his crying when he desires to be picked up. In a like manner, people and objects acquire a new significance for him; he begins to consider them as either desirable or to be avoided.

Either pleasure or displeasure constitutes the early emotional behavior of the infant. But after the speech period, there appear evidences of specific emotions such as rage, jealousy, affection, admiration, fear, egotism. The little child gives vent readily to his emotions and makes little effort to conceal them. Contact with the environment during school years develops a change in social consciousness. During the first few years the child learned to restrain his emotions because of fear of inflicted punishment. In association with his group, he learns to exert self-control because of group censorship. His playmates will not accept the same reactions that adults tolerate. They are likely to ascribe to him certain nicknames that typify his behavior, such as *tattle-tale, cry-baby,* etc. The child thus learns to conceal certain emotions because he desires social acceptance and approval. In this fashion, certain reactions become eliminated from his general behavior, although they continue to exercise a direct bearing on the development of the personality.

Adolescence.—*Physical growth.*—Adolescence is regarded as the age between puberty and twenty to twenty-two years. This period is characterized by marked growth, especially of the long bones. The rate of increase in height occurs most rapidly during puberty and tends to diminish after fifteen to sixteen years of age. Rapid growth of the arms, legs, hands, and feet gives rise to considerable awkwardness. Remarks concerning his clumsiness or change in appearance cause much embarrassment to the adolescent. Such remarks produce self-consciousness, which only serves to increase the awkwardness. Forcing of attention to oneself produces a lack of motor control.

During this time, the facial features change from their childish contour to those of the adult; the girl's face becomes rounder, while the boy's becomes more angular. There is

a change in body proportions. The voice of the boy becomes coarser and deeper; appearance of coarse hair on the face necessitates shaving. The development of these secondary sex characteristics, which are due to glandular secretions, are responsible for most of the changes in appearance and behavior at this time.

Development of sex interest.—Prior to and during pubescence, there seems to be little attraction between the sexes. Boys do not tolerate girls in their group activities. They have their gangs which are organized around dominant interests. Girls look upon boys as being rough and undesirable. This apparent aversion is really a camouflage for a beginning of interest in the opposite sex, and the tendency to "show off" when in the presence of the other is a means of attracting the desired attention. By fifteen or sixteen, however, there is no longer the obvious withdrawal from the company of each other; instead, there is a growing interest in social activities which include both sexes.

At this age, boys and girls adopt bizarre fashions in dress and behave in an almost inexplicable manner. Their only reason for their behavior is that "everyone else does so." To be different from the group becomes to them an intolerable situation. Group consciousness continues to be very strong and develops to a further degree in adolescents because they look upon certain groups as being superior and they have a strong desire to identify themselves with those groups. This trend marks the beginning of class consciousness.

Adolescent adjustment.—Adolescence is a difficult time for both parents and offspring. The adolescent considers himself grown up and capable of caring for himself. But although he appears to be an adult because of his size, his childish dependence and behavior continues. He wants to be free from parental control, but at the same time he expects others to continue assuming their responsibility for him. Because of his sudden increase in size, parents feel that he should act more grown up than he does. On the other hand, finding it difficult to recognize the fact that the adolescent is no longer a child, they lapse into their old habits of treating him as such, a situation which creates embarrassment and resentment on the part of the adolescent. It is a time of

adjustment, not only for the adolescent, but also for the parents. Much misunderstanding could be avoided by greater tolerance on the part of each generation.

One of the most complicated problems of adolescence is that of emancipation from the home. Emancipation does not mean leaving home, renouncing it, or freeing oneself from home relationships and community feeling. In rare instances, of course, it may mean this, but generally it should mean the freeing oneself from childish attitudes, habits, and feelings, and especially from dependence on others.

The generally recognized emancipating tendencies and expressions on the part of the adolescent are increased gruffness, lack of consideration, roughness of language, increasing intolerance of other children, and secretiveness, less demonstration of affection, and resistance to maudlin parental advice.

It is only natural for the adolescent to attempt to free himself from his childhood bonds, and the resistance raised by the parents calls forth greater resistance by the adolescent. Unless self-reliance and independence are instituted early in the child's life, emotional ties and habits of dependence upon parental protection often become stronger as adolescence advances.

The adult.—*Social behavior.*—Social attitudes—in the adult sense—are absent in the infant's behavior. The small child is entirely self-centered and responds only to those things which affect him. His interests are largely in those things which fulfill his own needs. He has not learned to be aroused by activities which affect others in his environment. Attitudes are acquired through experience, learning, custom. We see early manifestations of attitudes by the age of five or six. These attitudes may become more pronounced later or they may be changed and replaced by others as the individual grows up to full maturity. The adult develops attitudes towards his family, his business, his religion, and his country. Many of these attitudes, however, often have their genesis in early childhood as the result of experiences. Some people learn very early to be tolerant of others; some develop intolerance of anything which differs from their accepted beliefs. We find certain adults adjusting readily to changing

conditions. Others consume their time and effort in resisting new ideas and new methods. Although the more readily adaptable person learns to live in harmony with his fellow men, the resistive individual is always at odds with himself and the rest of the world.

Group consciousness, which emerges in childhood, becomes stronger in adult life. Various forms of behavior are accepted because they are customs of the group in which we have social intercourse. We wear particular types of clothes on different occasions, we say and do certain things, develop attitudes towards others, believe certain things, adhere to definite principles, accept standards of right and wrong—all because these have become habits of custom. We continue in these channels unless some new force becomes sufficiently strong to make other customs seem more desirable. Travel or establishing habitat with different groups has a great influence in breaking old traditions. The problem confronting each individual within the group is to accept the new changes which seem desirable but without arousing antagonism from his group.

Adult activities.—The average adult gives considerable time to many routine activities, such as work, recreation, and the establishment of family relationships. The years of full maturity from twenty to seventy are the most productive of the entire life span. It is for these years that nature has been preparing the mental and physical development of the child. It is during the mature years of life that professional contributions are made. And the most productive professional men and women are those who avail themselves of opportunities and who make successful adjustments to a world of change. Unfortunately, some are doomed to failure owing to certain "bad breaks," inadequate learning, and habits of work, or personality and character deficiencies. Some adults fail to understand that their own unwholesome attitude toward life inhibits accomplishment. They may fail to appreciate or evaluate fairly the work of others. They may even project their own faults and shortcomings on other people.

Adult learning.—The capacity to learn continues to increase for a few years after the termination of adolescence

and remains on about the same level for almost a decade before a slight decline begins. In general, maximum learning capacity exists from the early twenties to the late twenties. The decline from the late twenties to the late forties is only slight, but from the late forties to the late sixties it is more marked but usually not pronounced or severe. Here the capacity to learn is used to denote sheer mental power with the assumption that all other things are equal.

It is clear, therefore, that any adult who wants to learn something can do so if he has the health, the background, and the purpose. He need not be deterred by the thought that an adult cannot learn, for there exists ample pragmatic and experimental evidence to the contrary. Furthermore, adults may learn certain types of work much more readily than adolescents. This may be due partially to greater physiological maturity but it is largely due to the background of experiences and work habits that have been developed. Not infrequently, the adult has a more serious purpose than the younger individual for undertaking a given learning task.

Physical development likewise continues to the late teens or early twenties and remains about the same for a number of years. In middle life, both men and women may acquire additional weight which is usually misplaced. In old age, weight usually decreases, and even height may decrease owing to the damaging effects of arthritis in the neck and back or to the onslaught of other ailments.

Old age and senility.—With the coming of advanced age, marked changes of both a physical and mental character may be observed. These changes sometimes assume such proportions that the individual requires close supervision and care. The mental and physical infirmity due to old age is called *senility*. When senile patients become demented the condition is called *senile dementia,* which, while often regarded as an insanity is not a true form of psychosis.

The age at the onset of senility varies from individual to individual. Some individuals are relatively old at fifty, whereas others seem in excellent health and mental condition at eighty. In most cases, the onset is usually after seventy. The rate of mental and physical deterioriation also varies among different people. In some it is fairly rapid; in others,

relatively slow. The causes of old age and the rate of mental and physical decline are not well understood. The nature of the individual's constitution, the kind of environment he has had, the diseases he has contracted and their degree of severity, are but a few of the many causative factors or correlatives.

Physical changes.—The familiar changes in appearance during old age are the appearance of wrinkles of the skin, gray hair, stoop shoulders, and a slower and more feeble gait. The extremities take on a knotted appearance because of increase in amount of connective tissue in the muscles. The arteries lose their elasticity and the glands undergo a functional change. The sense organs gradually lose their former acuity. The vision become dim, the hearing impaired, taste and smell dulled. Regulation of body functions degenerates as is noted by change in temperature control of the body. The aged complain of the cold and tend to avoid strong currents of air.

Decline of abilities.—Those skills which are most related to the function of the sense organs are lost first. Motor skills are next to deteriorate and they decline in a reverse order from that in which they were built up. The fine muscle coördination which was acquired last is lost first. The basic motor skills which were first to develop are retained longer. The intellectual skills are retained still longer. Thus, the aged individual may not engage in active sports, do meticulous fine work with his hands, or have acute sensory perceptions; but he retains for a long period many of his mental functions.

Personality changes.—The personality of some aged people undergoes obvious changes. Old age is not in itself as potent a factor in producing these changes as are many of the environmental conditions. The senescent realizes his losses of independence, his former abilities, his memory for recent events; and, consequently, he feels an increasing dependence upon others, although he is reluctant to admit it. He sees younger people usurping the place he once held. His children are grown and are no longer dependent upon him. Because of diminished hearing and eyesight, he has fewer contacts with the world about him. Many of his contem-

poraries and possibly his lifelong friends gradually leave him. As a result, the senescent feels lonely and isolated. There is a tendency toward self-centeredness and interest in trivial matters, possibly because he lacks the facilities for developing larger interests. Irritability, impatience, and inclination toward criticism of the young and of the "present times" are largely due to frustration and a sense of futility.

Not all old people develop these tendencies. Those who have had many interests during their younger years and who have been active find much to interest them during their old age. Some look forward to these years with their freedom from responsibility as a time to do the many things they never had time for during their more active years. Herein lies the value of developing an interest in many hobbies during youth and middle age. Those whose life work can be continued during senescence are happiest and have fewer adjustments to make than those who are forced to abandon lifelong interests.

Our Point of View

Psychology deals with human behavior in health and in illness, in the normal and in the abnormal, in the child and in the adult. Underlying all behavior there is a basic unity which is important for students of nursing to understand clearly if they are to predict and control the behavior of patients in an intelligent manner.

The human organism, or personality, is a structure composed of the various tissues, organs, cells, and chemicals. There is organization to this structure; hence, organization is a characteristic of structure. In order to survive, secure food, maintain a state of equilibrium, and preserve the species, the structure must function. The function of the human being in illness and in health is conditioned always by the structure and its organization. There can be no function without structure and no structure without function. Every change in the structure is attended by a change in the functioning of that structure. Every time a structure functions it is being modified by that functioning.

There are many ways in which the structure is modified. It is changed by the natural processes of development and

decline, by nutrition, diseases, temperature, work, play, sleep, experience, and the like. Thus, the human structure is in a continuous process of change from the time the independent life begins with the fertilization of the ovum until death ensues. Moreover, throughout the life of the structure it is always functioning. Structure and function are merely two aspects of the living, dynamic personality.

The human organism, although a structure, is far more than the sum total of its parts, tissues, cells, organs, and chemicals if they are regarded as separate and independent elements. It is rather the whole structure functioning as a unit in a total situation. Behavior cannot be understood intelligently unless we comprehend this organismic character of the human personality. Behavior is always a function of the whole organism in its total environment.

Body and mind are simply useful language designations. Body is structure, mind is function. Every change in the body results in a change in the functioning of the mind. A mental experience, for example, an emotional shock, will modify body structure (more or less, temporarily or permanently, etc.) with the result that subsequent behavior will be different. If this were not true, there could be no such thing as education. The individual is influenced, changed, and modified by every learning, every experience, every thought. In fact, he cannot take a walk, go on a sightseeing trip, or attend a dance without coming home different in some respects from what he was when he left. Patients reflect the influences that have affected their lives in much the same way as they reflect the disease or disorder they have. The behavior of student nurses in class or at a dance reflects their whole developmental history and their total environment and not just the immediate situation confronting them. Thus, body and mind are two aspects of the personality in its total environment. Physical fatigue and mental fatigue are two aspects of one body condition; physical health and mental health, two aspects of health. The mental functions of the human being give to man a superior adjustment to his environment.

The organism is always functioning as a total or whole organism although many parts may play a major rôle. In an

orchestral performance, we react to the whole articulated result of harmonized instruments, yet here and there, this or that instrument may become dominant. We would not consider the orchestra as being a violin plus a trombone plus a cello, etc. It is more than the sum of its many isolated, differentiated parts; it is an organized unit, its effect being produced because of its unity. So, too, human behavior is not considered as atomistic or the product of many separate and differentiated entities; rather we accept the organismic point of view which conveys the idea of unity of the entire organism, emphasizing the interdependence of structure and function, and body and mind.

A cue for the next two chapters.—Although behavior involves the function of the whole body in a total environment, its potentialities are dependent upon specific organs specially adapted for the purpose of aiding the individual in developing and in making adjustments. The function of some bodily organs is to maintain normal activity and health. These are known as vegetative functions. Such is the part played by the heart, the blood, and the gastrointestinal tract. In the study of psychology we are principally concerned with the mechanisms that give man the power to think, adjust, learn, work, judge, appreciate, and experience emotion. Those essential structures are the sense organs which bring the individual in contact with stimuli or the environment, the muscles which enable him to respond to those stimuli or situations, and the nervous system and endocrine glands which make possible the coördination and control of behavior.

QUESTIONS AND EXERCISES

1. What situations in your environmental surroundings have called forth new adjustments on your part since you have become a student nurse?
2. In what ways and to what extent are you developing the habit of adjusting yourself to patients, head nurses, and coworkers? Do you become resentful if their opinions differ from your own? List as many situations as you can which have called forth either or both reactions.

3. Do you believe you are developing a "weak character" if you change your mind when someone attempts to set you right?
4. If you were asked to work certain hours which would necessitate your breaking an important engagement would you feel that the charge nurse was being unfair to you? Or even though disappointed would you view the situation from the standpoint that personal wishes must often be put aside for the many demands that life makes on everyone?
5. Do you have any behavior characteristics that you would like to change? If this same characteristic occurs in another member of your family, do you believe that it was given to you through heredity, thereby rendering any change impossible?
6. Why are all experiences that a child encounters in a hospital so important? Why is it necessary to keep his contacts as pleasant as possible? How many fears and prejudices, do you have that you can trace back to unfortunate childhood experiences?
7. Select one of your dominant traits, good or bad, and attempt to recall what past environmental factors have made this characteristic outstanding? For the duration of your student training keep in mind the fact that environmental factors and your reactions to them will modify and add to your present qualities. List the characteristics as a nurse you would most desire and develop the habit of controlling your reactions to situations so those desirable qualities will become yours.
8. Are many of your attitudes the result of your own thinking or do they reflect the opinions of your friends, coworkers, or family? Are they wholesome attitudes or are they prejudiced to such extent that they will interfere with your own successful and happy living? How often have you built up an attitude of dislike for a certain charge nurse or a ward from the opinion of another student only to find your experience with that person or situation most pleasing?
9. Why is it necessary to give the same consideration and respect to the religious views of your patients and coworkers as to one of your own faith?
10. Why do some students in your class do finer work and make better grades than others even though everyone is given the same opportunity to learn?
11. People of foreign countries look upon many of our habits

and customs with surprise and amusement. How do you account for this attitude?

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CHAPTER III

THE MUSCLES AND SENSE ORGANS

The Muscles

The muscles of the body, about six hundred in number, may be classified into three groups: (1) the skeletal or striped, (2) the smooth or unstriped, and (3) the cardiac, found only in the walls of the heart.

The *skeletal muscles* constitute from one-third to one-half of the total body structure. Unlike the smooth muscles and the cardiac muscles, they are subject normally to voluntary control, although this control may be lost as a result of certain injuries or diseases which destroy the nervous centers controlling them. The skeletal muscles enable the individual to change position or make a movement or tendency to movement of some kind by contracting or relaxing. The movement may be perceptible or it may be below the threshold of consciousness because the motor activity is slight. The inhibition of activity of one muscle or group of muscles by the activity of another is a motor response even if no actual movement occurs. The skeletal muscles are used for locomotion, dancing, talking, gesturing, emotional expressions, eating, and many other adjustments. Their movements are relatively rapid and irregular. While a skeletal muscle has the power of independent contraction, its action is normally initiated by an impulse over a motor nerve from the cerebrospinal nervous system. The amount of the contraction varies with the nature and strength of the stimulus. The coördination and control of the muscles, effected by the cerebrospinal nervous system, makes for speed, precision, and strength of movement. As a result of prolonged stimulation or exercise, muscles become fatigued, losing temporarily the power of contracting or responding to stimuli. Muscular fatigue is due to the accumulation of waste products in the

muscles, certain chemicals, acids or toxins, in the blood stream, and to changes in nerve cell bodies and the synapses.

Fatigue may be prevented or overcome by appropriate amounts of rest and sleep, relaxation, and tonics or stimulants. Experiments show that in general it is better for the worker to rest at the first onset of sensations of fatigue rather than after much fatigue has been experienced. Boredom, lassitude, and ennui often give the individual a false sense of fatigue.

The *smooth muscles* are found in the walls of various visceral organs, such as the blood vessels, lungs, the digestive tract, and the urinary and genital organs. This tissue is also found in the iris of the eye, where it contracts and dilates the iris. The smooth muscles act involuntarily, reflexly. They are susceptible to the stimulating and inhibiting influences of certain internal secretions and to impulses from the autonomic nervous system. They are slower to act than the skeletal muscles, slower to return to a normal state after excitation, and not infrequently have a recurrent rhythm of movement.

Tonicity.—Muscle-tone or tonus is a continuous state of slight muscle reaction. The smooth muscles possess this tendency toward contracting, or tonus, for relatively long periods. Tonicity in the skeletal muscles insures smoother and more ready responses. In normal health there is always a tension of the muscles due to a constant stream of impulses from sense organs or brain centers. The muscles are likewise active or in a state of excitation. This condition manifests itself in the "keyed up" state in the student who is unable to relax or go to sleep. A patient convalescing from decreased muscle tone may find it most difficult or impossible to overcome his inertia. On anticipating entering training school or college, the student finds herself in a state of organic readiness or motor expectancy as well as "mental" readiness. Fear of an approaching situation may be marked also by a tension.

The muscles have not only terminations of motor nerves imbedded in them, they also contain "sense organs," a part of the proprioceptor mechanism. These kinæsthetic receptors in the muscles, tendons, and joints consist of muscle

cells and sensory fibers which conduct the impulses, initiated here, to the brain. Kinæsthetic sensations are the outcome.

The Sense Organs

The human being is a part of an ever changing environment which requires all kinds of adaptations and adjustments to it. He must adjust in both health and illness or else he would not survive. The effectors—muscles and endocrine glands—are the responding organs of the body; the nervous system and endocrine glands, the coördinating and controlling mechanisms; and the sense organs, the gateways of experience or the contact points with the environment to which the individual adjusts or responds. The receptors are specialized sensitive cells found in sense organs such as the eyes, ears, tongue, nose, skin, semicircular canals of the ear, the muscles, etc. There are at least ten important types of receptors. These receptors are highly differentiated and specialized in function. Sound waves stimulate the organ of hearing, light waves the retinas of the eyes.

The receptors are sensitive to certain stimuli. The eyes do not respond to all light waves, the auditory organ to all sound waves, the taste buds to all chemical substances, and so on. While the stimuli that impinge on the sense organs may be rich and varied in quality, the organism gets to know directly through the senses only a part of his environment. We do not see ultra-violet rays. We hear sound waves that fall within a certain range of vibrations per second, but if they are above or below this range they are inaudible. Artificial aids, however, can increase the range of some individuals who have defective sense organs. But again, the human being always reacts to his environment as a functional unit.

Three classes of receptors are usually noted. These are: (1) the *exteroceptors* or receptors that are sensitive to stimuli arising from without the body or in contact with it, (2) the *proprioceptors* or receptors located between the internal and external surfaces and which are stimulated by activity of the organism itself, and (3) the *interoceptors* or receptors found in the body cavity and in the internal organs and which are

stimulated by conditions within the organism and its activity. The exteroceptors include the organs of sight, hearing, taste, smell, pressure, temperature, and pain. The proprioceptors are located in the muscles, tendons, and joints, and in the semicircular canals and vestibule of the ear. They give us the kinæsthetic and static senses. The interoceptors are located in the deep tissues, organs, and vesicles and in the linings of the alimentary tract and give rise to taste, hunger, thirst, pain, nausea, suffocation, and temperature, and forms of sensitivity associated with sex and other strong emotions.

Most sense organs respond to stimuli provided by the external environment. There is another class of receptor, however, which is stimulated by activity of the organ itself, as in the case of muscle action. In both cases, the function of the receptor is to respond to appropriate stimulation by liberating nerve energy in the form of nerve impulses. The reading of this passage involves the stimulation of the retinas of the eyes where energy is liberated and transmitted over the optic nerve to the thalamus and thence to the occipital lobes of the cerebrum in the form of nerve impulses.

The eye.—The human eyeball is a globular organ that can be moved and rotated by six muscles. Each of the six muscles has one attachment to the eyeball and one on the wall of the orbit. There are four recti and two oblique muscles (superior oblique, superior rectus, lateral rectus, medial rectus, inferior rectus, and inferior oblique). The movements of the eyeball are largely involuntary, as in convergence. The eyeball contains a vitreous humor that enables it to keep its shape. In the front part of the eyeball is a transparent and bulging window which is kept in proper place by the watery or aqueous humor inside. Back of the cornea is the crystalline lens. It is convex on both surfaces. The lens is held in place by the ciliary muscles or ring-shaped suspensory ligament attached to the edges of the lens. These muscles act reflexly to change the shape of the lens.

The ciliary reflex operates in this manner. When one looks at a near object, the ciliary muscle contracts and the lens becomes thicker and rounder or more convex. For distant vision, the lens becomes flatter or less convex as the ciliary muscle relaxes. This mechanism in the eye which

enables the individual to see objects clearly at different distances is called *accommodation*. There are still questions as to how accommodation takes place.

When the individual looks at a distant object, his eyes are almost parallel, as we might say, but when he looks at a near

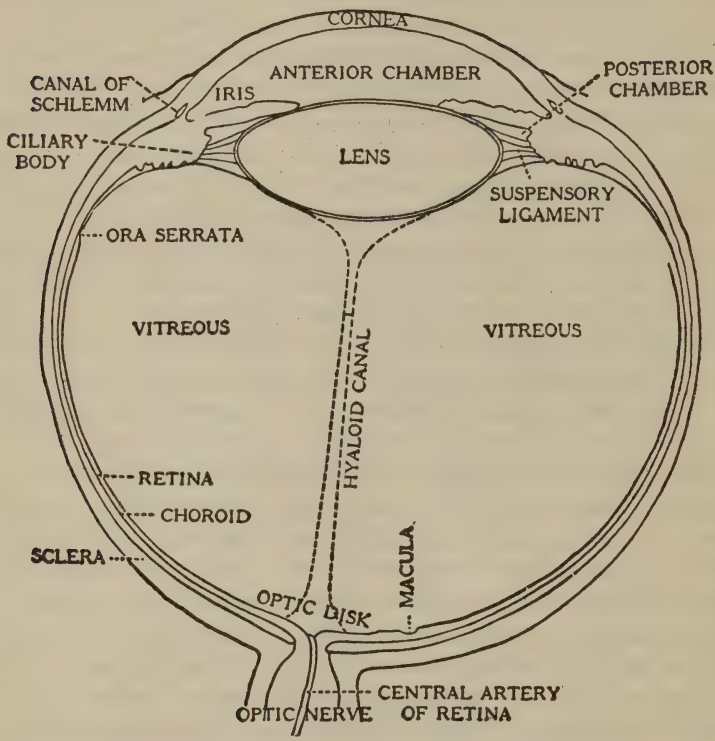

FIG. 8.—HORIZONTAL SECTION OF THE HUMAN EYEBALL SHOWING THE CORNEA, IRIS, LENS, CILIARY MUSCLES, CLEAR LIQUID, AND RETINA. From Charles H. May, *Manual of Diseases of the Eye* (revised), Baltimore, The Williams and Wilkins Company, 1941. Used by permission of the author.

object, the eyes turn slightly toward each other. This action or function is called *convergence*. Obviously, convergence and accommodation are closely associated. The function of convergence is to give single vision, that of accommodation to give clear vision. Irregularities in these functions create many problems for the medical profession and educators.

In front of, and lying over, the lens is a radiating unstriped or smooth muscular diaphragm which gives color to the eye. The circular opening in the center of the iris is called the *pupil.* The contraction and dilation of the iris controls the amount of light entering the eye. The iris functions automatically, or reflexly, and is not under voluntary control.

The human eye has an opaque protective outer covering, the *sclerotic* layer, to which are attached the muscles that move the eyeball. Inside the sclerotic covering is another

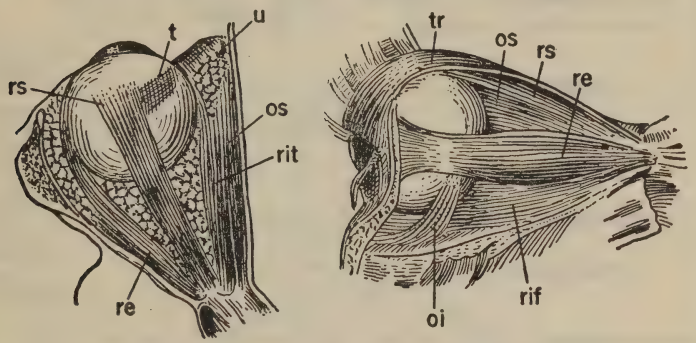

FIG. 9.—MUSCLES OF THE EYE: *rs,* SUPERIOR RECTUS; *rif,* RECTUS INFERIOR; *re,* EXTERNAL RECTUS; *rit,* RECTUS INTERNUS; *os,* SUPERIOR OBLIQUE; *oi,* INFERIOR OBLIQUE; *t,* TENDON OF SUPERIOR OBLIQUE WHICH RUNS THROUGH THE MEMBRANOUS PULLEY, *u,* ON NASAL WALL OF SOCKET. From W. B. Pillsbury, *The Fundamentals of Psychology* (3rd ed.), 1934, p. 420. By permission of The Macmillan Co., publisher.

membrane, the *choroid,* which contains the blood vessels and a deeply pigmented layer to exclude all light except that which enters through the pupil. Inside of the choroid is the *retina* which has seven different layers of several hundred thousand nerve cells of different kinds. The layer next to the choroid contains the specialized cells, sensitive to light, known as *rods* and *cones.* The layer lying next to the vitreous humor contains the fibers of the *optic nerve* which transmits impulses arising in the rods and cones to the optic thalamus whence they are relayed to the occipital lobe of the cerebrum.

In brief, the rods and cones of the retina are the true receptors for visual stimuli, all other eye parts are merely accessory. The rods are sensitive to faint light but the re-

sulting sensations are grays of different brightnesses. The cones are more highly developed structures that are concentrated at the center of the retina. They are sensitive to color stimuli as well as all degrees of brightness (white, black, gray).

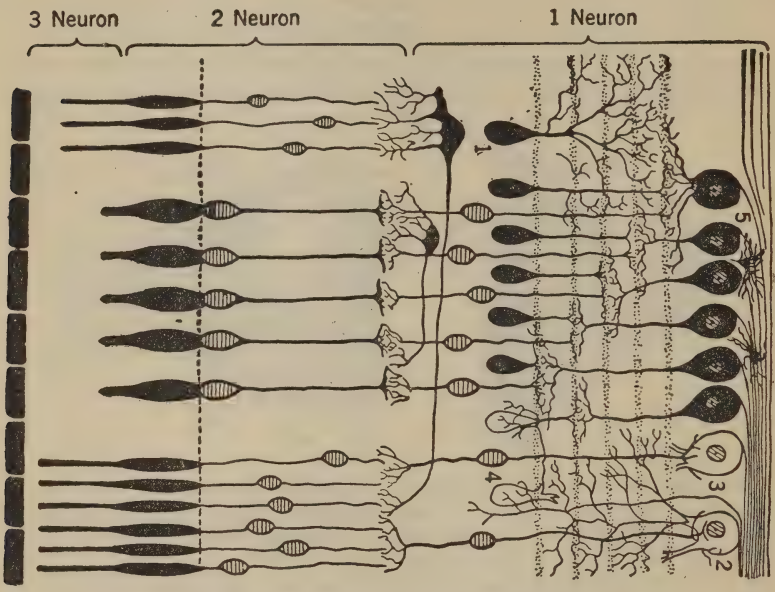

FIG. 10.—SECTION OF THE RETINA, SHOWING THE NEURONS. From W. B. Pillsbury. *The Fundamentals of Psychology* (3rd ed.), 1934, p. 108. (After Cajal.) By permission of The Macmillan Co., publisher.

Auditory receptors.—The ear is both a sense organ for hearing and for balance. As drawings and charts will show, the human ear consists of an external, a middle, and an inner part. The external or outer ear is conch-shell shaped. It is separated from the inner ear by a canal and a *tympanic membrane* or eardrum, at the inner end of the canal. The inner ear or tympanic chamber is surrounded by a bony wall having two window-like openings which are covered by membranes. Stretched between these two windows are three small bones, the *malleus, incus,* and *stapes* (hammer, anvil, and stirrup). The inner ear consists of a membranous sac filled with a lymphlike liquid. This space in the skull bones

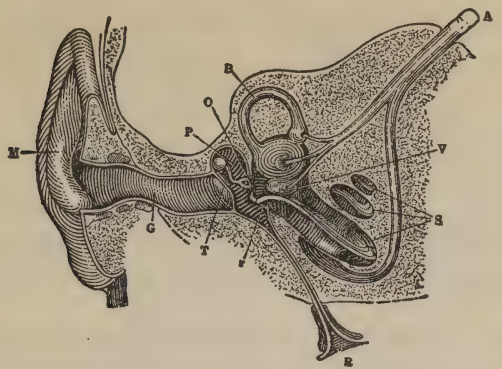

FIG. 11.—CROSS SECTION OF THE EAR, SHOWING OUTER EAR, CANAL, TYMPANUM, MALLEUS, INCUS, STAPES BONES, COCHLEA, AND THE EUSTACHIAN TUBE. From Kimber, Gray and Stackpole (11th ed.), *op. cit.*, Fig. 317. By permission of The Macmillan Co., publisher.

is more or less of a labyrinth, containing both the semicircular canals and the *cochlea*. The receptors for hearing

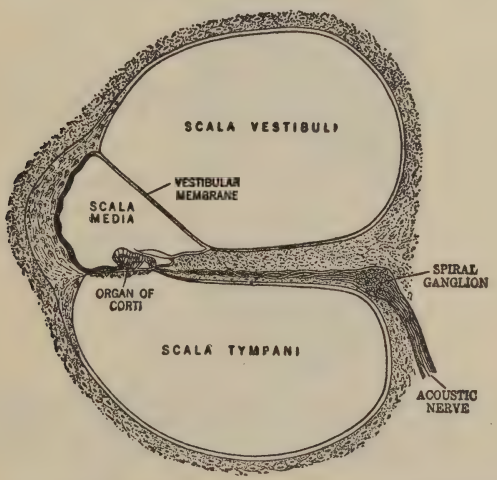

FIG. 12.—DIAGRAM OF A SECTION THROUGH THE COCHLEA SHOWING THE BASILAR MEMBRANE AND THE ORGAN OF CORTI. From Kimber, Gray and Stackpole (11th ed.), *op. cit.*, Fig. 321. By permission of The Macmillan Co., publisher.

are in the *organ of Corti* in the basilar membrane of the coiled-shaped cochlea. These receptors are sensitive to sound waves having a range of frequencies between 16 to 18 and

20,000 to 22,000 per second. Impulses liberated here are transmitted over the auditory nerve to the brain and the resultant mental response is auditory experience, auditory sensation, or plain hearing. Thus waves set up in the environment by vibrating objects are transmitted to the sensitive organs of Corti by means of the eardrum, the three bones of the middle ear, and thence over a membrane or oval window to the cochlea in the inner ear in which the sensitive cells are located and in which the auditory nerve fibers terminate.

Gustatory or taste receptors.—The receptors for taste are the *taste buds* located on the tongue. The stimuli for taste are substances in solution. Taste buds that respond to sweet

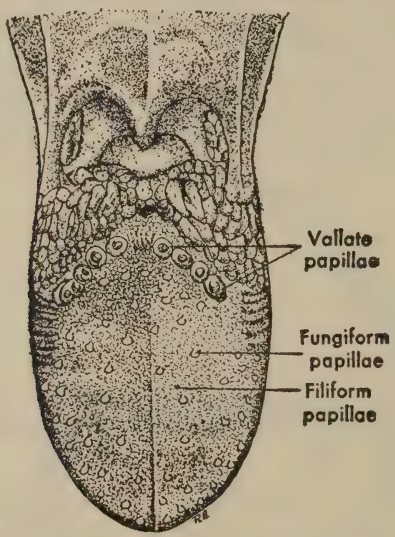

FIG. 13.—A DRAWING OF THE TONGUE SHOWING THE GENERAL LOCATION OF TASTE BUDS. From Kimber, Gray and Stackpole (11th ed.), *op. cit.*, 1938, Fig. 314. By permission of The Macmillan Co., publisher.

solutions are located at the tip of the tongue, those for sour at the edges or sides, those for bitter at the back, and those for salt distributed over the entire surface. This sense and that of smell are sometimes spoken of as the chemical senses.

Olfactory or smell receptors.—The receptors for smell are spindle-shaped cells located in the mucous membrane of the upper nasal cavity. They cover an area about the size of a

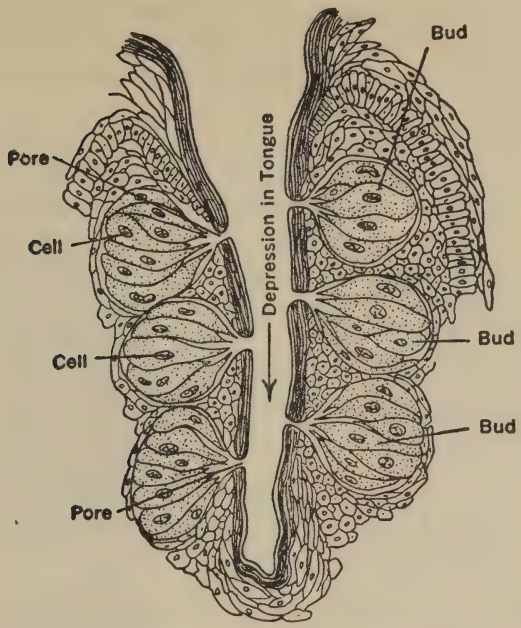

FIG. 14.—A HIGHLY MAGNIFIED DEPRESSION IN THE TONGUE SHOWING SIX TASTE BUDS. (Adapted from Douglas and Holland.)

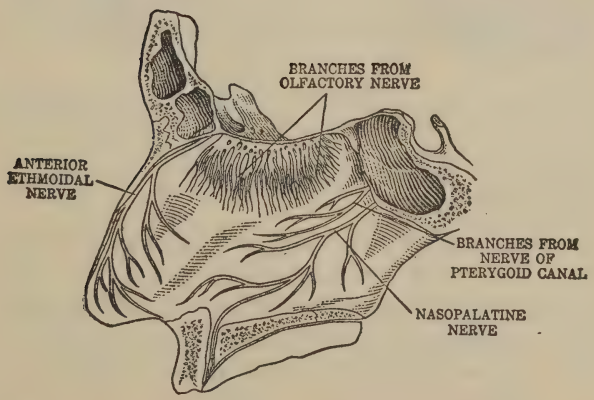

FIG. 15.—CROSS SECTION OF NASAL CAVITY SHOWING THE OLFACTORY AREA SOMEWHAT ENLARGED. From Gray's Anatomy, courtesy of Lea and Febiger.

thumb-nail. These olfactory cells are senitive to gaseous particles which come into contact with them. Impulses set up in these cells are transmitted over the olfactory nerve to the olfactory lobes of the brain.

The cutaneous receptors.—As a result of skin sensitivity many adjustments are made to the external world. The skin contains numerous nerve endings in the dermis and, also, at

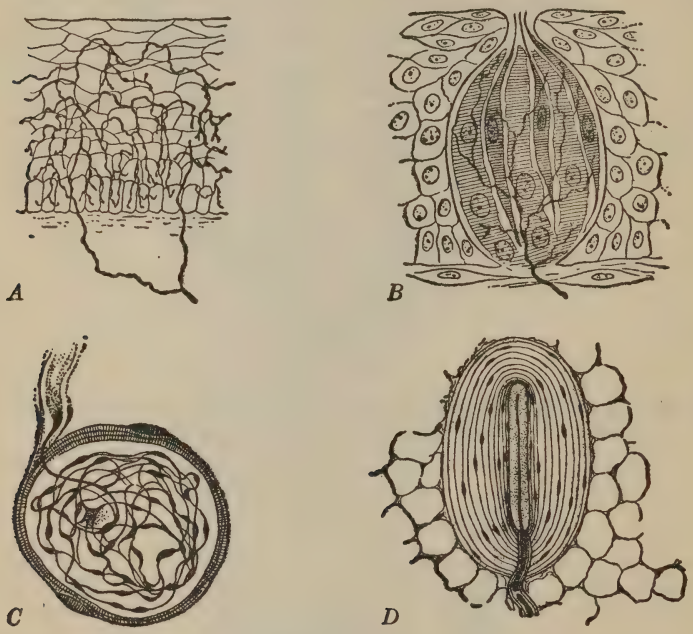

FIG. 16.—RECEPTORS. *A,* Diffuse sensory nerve fiber terminations in stratified squamous epithelium. *B,* Taste bud. *C,* End-organ of Krause from conjunctiva. *D,* Pacinian corpuscle. From Kimber, Gray and Stackpole (11th ed.), *op. cit.,* Fig. 132. By permission of The Macmillan Co., publisher.

least one specialized type of receptor, the organs of touch and pressure. The touch corpuscles lie near the surface of the skin and are found about the hair roots. The pressure bulbs lie deeper in the skin. In addition to being sensitive to touch, the skin is sensitive to temperature (warmth and cold). As certain areas are much more sensitive to warmth or cold than other areas, it has been assumed that specialized end-organs existed for these senses. This assumption, however,

seems to have little or no merit. We do know that the proper stimulus will elicit warm and cold sensations.

Pain.—There are no specialized end-organs for pain but wherever there are free nerve endings—whether on the surface of the body in the skin or in internal tissues—pain can be elicited when an appropriate stimulus, mechanical or chemical, is applied.

Sometimes, pain is not localized at the seat of trouble. A patient may complain of a headache but the real difficulty may be in the liver or stomach. Other disturbances in the viscera are often "referred" to the surface of the body. *Referred pain* may be explained as follows: When pain impulses reach a certain segment of the cord they are referred to that particular body surface supplied with sensory nerves by this same segment.

The kinæsthetic receptors.—The kinæsthetic receptors are simply muscle fibers and free nerve endings which are stimulated by movement, pushing, pulling, lifting, or by con-

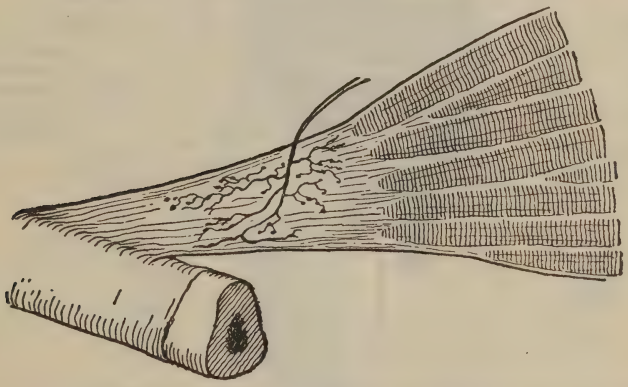

FIG. 17.—A HIGHLY MAGNIFIED SECTION OF MUSCLE AND TENDON FIBERS SHOWING KINÆSTHETIC NERVE ENDINGS. From Kimber, Gray and Stackpole (11th ed.), *op. cit.*, Fig. 133. By permission of The Macmillan Co., publisher.

ditions within the parts. The kinæsthetic sense functions in nearly everything we do from maintaining posture, walking, dancing, directing movement, estimating weight by lifting, and the like.

The static sense.—The receptors for this sense are located in the *semicircular canals, the utricle* and *saccule.* These

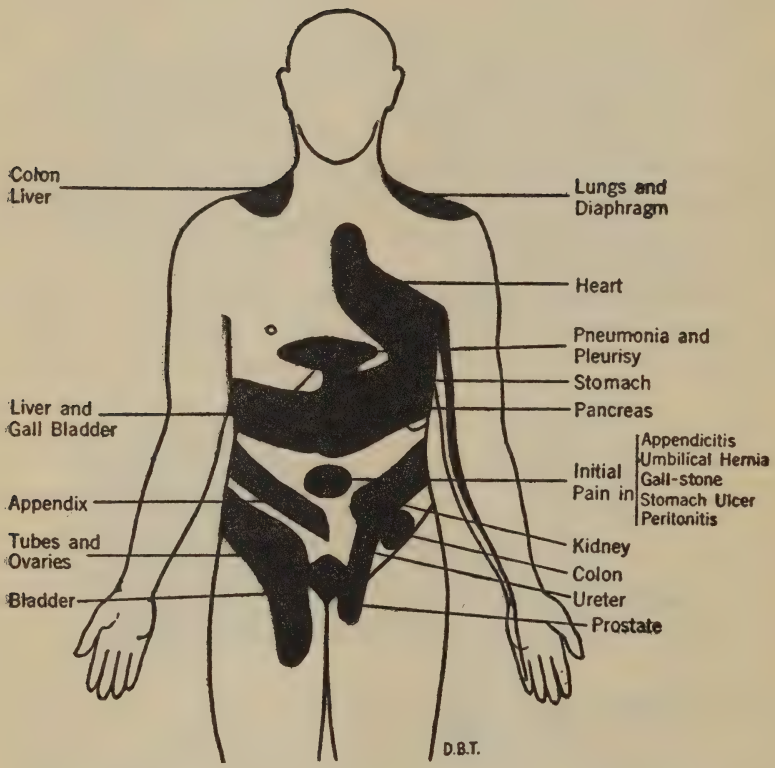

FIG. 18.—REFERRED PAIN. ANTERIOR VIEW. The areas to which pain in the various bodily organs is referred are indicated. Courtesy of Dr. Donald B. Thorburn.

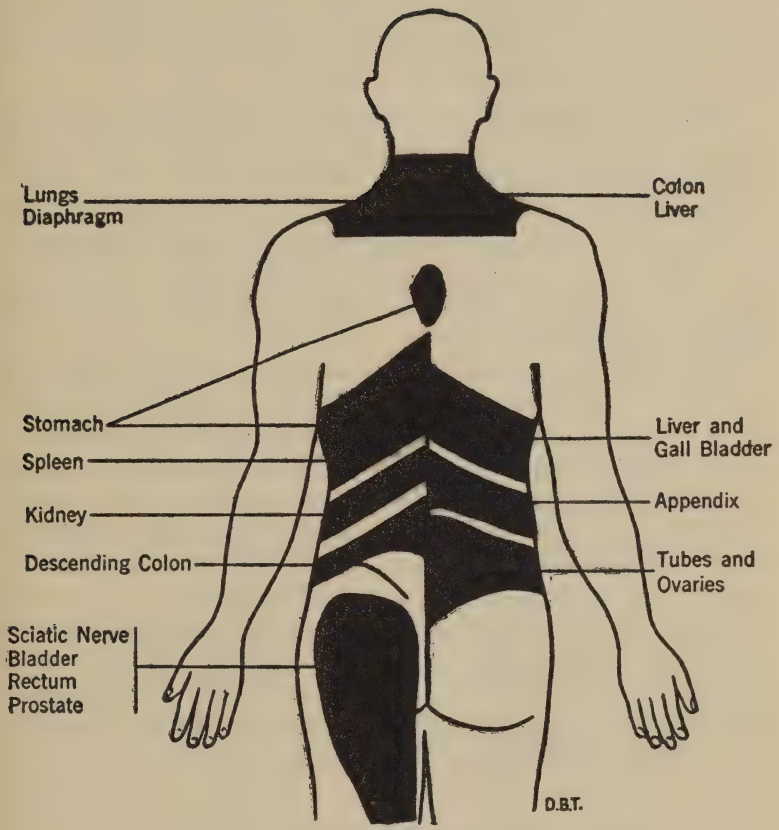

FIG. 18.—*Continued.* REFERRED PAIN. POSTERIOR VIEW. Courtesy of Dr. Donald B. Thorburn.

canals, filled with liquid, lie in different planes. Movements of the head change the position of the liquid which in turn stimulates the hairlike cells which project into the liquid. When these sensitive cells are stimulated, impulses are liberated which are transmitted over nerve fibers to the cerebellum, the nerve center controlling body balance and coordination. When the body gets out of equilibrium or balance an adjustment is possible because of this sense and the coöperating mechanisms.

Additional comments.—Although we have discussed the receptors as if they were entirely independent in their functioning, such is not the case. Taste borrows from smell. The kinæsthetic, static and visual senses combine to give the body balance and coördination. In the case of the blind, the auditory sense aids materially in helping the unfortunate to get about in much the same way as a "seeing" man draws upon his visual sense.

If one sense is lost, the other senses do not compensate for the loss. The blind, for instance, do not develop a more acute sense of touch. What actually happens is that an individual deprived of one of the important senses will train his attention so that he can do some new task efficiently. The blind learn to read Braille through the finger tips. There is no increase in acuity of touch, just better concentration on the task and perhaps more dynamic motivation.

Disorders in the various senses are not infrequently encountered. As we shall see later, disorders of the eye are a common occurrence whereas disturbances in balance, kinæsthesis, taste, hearing, warmth, cold, pressure, tickle, vibration, and pain are less frequent in their appearance.

Sensory Defects, Disorders, and Hygiene

Visual defects and disorders.—Two major types of disorders of vision have been recognized: the organic and the functional. The most common visual defects of the first class are *hyperopia* or farsightedness; *astigmatism* or structural defect such that the rays of light do not converge to one point on the retina; *myopia* or nearsightedness; and *presbyopia* or oldsightedness.

In hyperopia, the light rays come to a theoretical focus behind the retina due to the eyeball being too short from front to back or the lens lacking in sufficient curvature to focus the image on the retina. Glasses with the proper convex lens will correct the defect. In young children the growth of the eyeball may fail to keep pace with general bodily growth. This results in some degree of farsightedness. Unless this condition is corrected, the prolonged muscle control of the lens will cause excessive strain which gives rise to headaches, dizziness, nausea, and other reflex nervous disturbances.

Astigmatism is due to irregularity in the curvature of the cornea or lens causing irregular refraction of light and blurred vision. *Corneal astigmatism* is due to the curvature of the cornea being unequal in different directions, and *lenticular astigmatism* is caused by irregularity of the curvature of the crystalline lens. Corneal astigmatism is usually corrected by wearing glasses with the proper cylindrical lens. Blurred vision is also common in myopic and hyperopic individuals when they do not wear glasses.

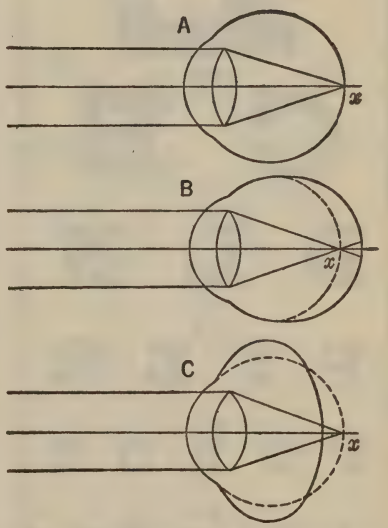

FIG. 19.—DIAGRAMS SHOWING NORMAL, NEARSIGHTED AND FARSIGHTED EYES. From Kimber, Gray and Stackpole (10th ed.), *op. cit.*, Fig. 266. By permission of The Macmillan Co., publisher.

In myopia the rays of light are brought to a focus in front of the retina, owing to an elongation of the eyeball or to the lens having a too pronounced curvature which prevents the image from focussing properly on the retina. If this defect is not corrected with concave lens of the proper strength, close eye work over long periods of time may produce an undue amount of strain on the eyeball, causing it to elongate still more as in the case of progressive myopia.

Presbyopia is the condition brought about in old age by failure of accommodation. A newspaper will be held at full arms' length because near vision is indistinct. Bifocal lenses

FIG. 20.—SNELLEN LETTER CHART AND AN E CHART AFTER SNELLEN'S TEST TYPES.

are used to help both near and distant vision, the top part for distance and the lower part for reading.

Another set of organic visual disturbances is due to muscular defects or disorders. *Strabismus,* or *squint,* or cross-eye of the convergent, divergent, or vertical type, is due to in-

coördination of the eyeball muscles of the two eyes with the result that they do not focus on the same object simultaneously. Double images are perceived (*diplopia*). In order to avoid double images, the dominant eye is directed at the object while the other eye turns in some other direction. Diplopia may be prevented by the *suppression of vision* in one eye. If the convergence of the two eyes functions inadequately, or if the vision of either eye is impaired, the merging, fusion, or unification of the two retinal images will be slower than normal. Vergence deficiencies are sometimes responsible for carsickness, seasickness, etc. If squint exists for any length of time, impaired vision usually results. Pronounced *amblyopia,* or diminished visual acuity without any discoverable change in the eye structure, may be the outcome. An operation on the eyeball muscles may be required for the correction of the squint but the results are uncertain in many instances. Visual training both before and after such operations has been found helpful in many cases. Visual training or reëducation will correct the deficiency in the majority of instances that are functional in nature.

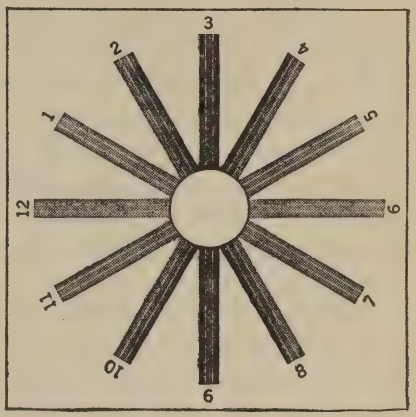

FIG. 21.—ASTIGMATISM CHART. This is the way a chart with all lines of equal weight would appear to a person with one type of astigmatism.

Occasionally cases will be noted where the eyes have a tendency to turn in (*esophoria*), or a tendency to turn out (*exophoria*), or to turn in or out to some degree at the *near point* or ordinary reading distance (*near phoria*). *Asthenopia,* or blurred vision, due to weak ciliary muscles controlling accommodation, is a common occurrence. Sometimes there is a loss of vision due to the atrophy of the optic nerve or disease of the retina (*amaurosis*) or a partial loss of vision due to alcohol, lead poisoning, quinine, arsenic, or uremic

poisoning (*toxic amblyopia*). About four per cent of men and one-half of one per cent of women have color blindness.[1] There may be a narrowing of the field of vision, or defects in estimating size and shape, blind spots, or floating specks. *Nystagmus,* or a rapid oscillation of the eyeballs, may be a sign of some disease, tumor, multiple sclerosis, or destruction of certain ear membranes. However, the exact cause of nystagmus is unknown. In many cases visual training proves effective in reducing the amplitude of the movements.

Many of the above named disorders may be functional, since no tangible organic cause exists for the impairment or loss of vision. Recovery is sometimes effected suddenly. In all functional cases the reflexes remained undisturbed. *Hysterical blindness* without the presence of identifiable structure defects, although rare in children, is found occasionally in adults.

Auditory defects.—Like visual defects, auditory defects may be organic or functional. Among the organic disorders are to be noted varying degrees of deafness (*anacusis*) ranging all the way from total deafness to a slight impairment of hearing, or deafness to certain tones and not to others, and a subjective roaring or singing in the ears (*tinnitis aurium*). Impaired hearing is usually caused by injuries to the tympanic membrane, lesion of the auditory nerve, and a fixation or disengagement of the ossicles. The predisposing causes are neglected running ears, hardened wax, diseased tonsils, adenoids, and such diseases as scarlet fever, measles, diphtheria, mumps, influenza, syphilis, and meningitis, or injuries produced by foreign objects such as hairpins, matches, oils, and lotions.

Tonal deafness seems to be due to destruction of certain organs of Corti or fibers in the basilar membrane or to a concentration of the liquid in the cochlea. Tinnitis aurium may result from a congested Eustachian tube, drugs such as quinine, inflammation of the middle ear, unequal air pressure on the two sides of the eardrum, continual auditory stimulation, or disturbances in blood circulation in these parts.

[1] The extent and nature of color weakness can be determined by tests of color perception such as the Ishihari, Holmgren, Dunlap, and Philip Tests.

Hysterical deafness is due to a psychic condition rather than to any structural defects. Some individuals who make considerable use of the telephone report that the buzzing of the telephone receiver continues (in the head) for varying lengths of time. This is sometimes regarded as a symptom of an occupational neurosis.

Visual and auditory acuity or impairment are not always due to sense-organ defects. Certain pathologies may produce changes in sensory behavior. Epileptic patients often report a heightened sense of acuity in the aura which precedes the convulsion. Some drugs and the tetanoid state associated with low blood calcium result in a hyperacute state. In the case of thyroid deficiency (hypothyroidism), sensory acuity is below normal. Myxedema cases are often hard of hearing.

Auditory and visual testing.—Public health and school nurses make considerable use of tests that have been developed for the purpose of ascertaining the degree of acuity and the nature of any impairment. In most situations, hearing acuity can be estimated roughly by use of a whisper or watch test but more accurate results call for the use of a good audiometer. All audiometer test results show a comparison of the average normal threshold of hearing acuity with that of the person tested. If the results are to be valid, the tests must be administered with a standard instrument; and a standard method of scoring results and interpreting the findings must be used. The instrument used in testing the hearing of a group at one time is called the phono-audiometer. The phonograph audiometer developed by Western Electric Company in the Bell Laboratories is a good type.

Group hearing tests serve to screen out individuals with defective hearing so they can be studied further. These cases can then be tested individually by using the Seashore, McCallie, Aurex, Maico, Sonotone, or other standard audiometer for individual testing.

In testing visual acuity, the best results are generally obtained by using the telebinocular instrument, the standard Snellen Chart, or a symbol chart if the examinee is an illiterate. The telebinocular is satisfactory for screening, within limits, the individuals who need a thorough examination by an eye specialist. The Snellen Chart is a fair test within

certain limits but it is not possible to secure from its use any data on binocular coördination or suppression of vision.

An astigmatic chart is used for the detection of unequal curvature of the cornea or crystalline lens.

In the study of some eye conditions, certain static tests may be used. Such tests have inadequacies that should be understood by the examiner. A Flees' box device has been constructed for the detection of feigned blindness in one eye; and a Maddox Multiple Rod device and a Stenopaic Lens for detection of muscular imbalance by dissociation of images.

The results of some recent researches inquiring into the validity and reliability of the numerous tests of vision and hearing that are now being conducted over the country prove conclusively the need of a proper training in the use of such devices and an adequate background for an intelligent interpretation of the results of the examinations.

Cutaneous disorders include various hysterical anesthesias such as the loss of sensations of pressure, warmth, cold, tickle, vibration and pain; hysterical hyperesthesias manifested in unusual sensitivity for pain as in cases suffering from certain drugs, alcohol, toxins, or inflammation of ganglia.

Not infrequently we find patients who experience some perversion of the cutaneous sense such as skin sensations without any physical or chemical stimulus being applied from without (the familiar sensations of something crawling on the skin), inability to recognize objects by touch, and strange unpleasant sensations caused by lesions.

We know that some of these cutaneous disorders are functional in origin and nature since the skin anesthesias do not follow the actual distribution of nerves. Moreover, these disorders may appear or disappear suddenly without any obvious cause or be greatly influenced by suggestion.

Olfactory disorders include some loss in the recognition of certain odors, or else everything smells "foul," "like stale eggs," etc., to the individual.

Gustatory disorders are similar to the olfactory disorders in nature. There may be a loss of taste for certain substances, or everything may taste bitter, or an exaggerated sense of taste in which one often experiences a taste after

eating which is quite the opposite. Many of the extreme likes and dislikes of food or loss of taste are of a functional character.

Kinæsthetic disorders may be observed in failure to control one's movements or to direct them properly as in the case of alcoholic intoxication or locomotor ataxia, or certain vestibular disturbances. There are also kinæsthetic hallucinations in which the individual imagines that he was knocked down or shaken up. There may be an over-kinæsthesis or under-kinæsthesis, an inability to move one's finger to a certain body part or confusion in directing the limbs.

Static sense disorders.—One disorder of the static sense manifests itself in some unusual shoulder or head position. Spasticity, vertigo, and nausea are also indicative of a static disturbance.

QUESTIONS AND EXERCISES

1. How do skeletal and smooth muscles differ in structure. Consult your textbook in physiology and anatomy if need be.
2. What are the respective functions of the smooth and skeletal muscles?
3. What is muscle tonus and how is it maintained?
4. What is muscle fatigue? How can be it prevented? If present as the result of work, how can it be overcome? How does it differ from that kind of general fatigue or body weariness that we find in cases of neurasthenia or nervous energy depletion?
5. Make a chart of the sense organs, indicating their location, and respective functions.
6. Do you use muscles or sense organs or both in the reading of a passage, question, or book? What other mechanism is indispensable in making adjustments besides the sense organs and the muscles?
7. Describe the acts of seeing and hearing.
8. What are the chief defects or disorders of the eyes that are encountered in the general population? Make a check on members of your class to ascertain how many need glasses, how many wear glasses, the kinds and degrees of defects present, etc.
9. How may we determine the degree of auditory acuity?
10. How are the senses affected by vitamin and hormone deficiency, if at all? What is night blindness? What causes it?

11. Might a patient have hyperacuity or hypoacuity of vision or hearing without any defect in the sense organ? Explain.
12. Do patients ever report sensory disturbances in connection with their ailments? Make a list of such symptoms, noting the disorder as diagnosed by the physician, the medicine prescribed, and the symptoms reported.
13. Write a paper on the topic: Sensory Hygiene for Nurses in Training.
14. Are some people more sensitive constitutionally to pain stimuli than others? Can all patients stand the same amount of pain without crying out? What effect has prolonged pain on the body state and processes?
15. What senses are present in the newborn babe? in one that is ten days old? in one that is a year old?
16. Criticize the statement heard so often to the effect that man has five senses. With normal eyes can the human being see all light waves that exist or with normal ears can he hear all sound waves? Just what are the functions of the sense organs?

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CHAPTER IV

THE NEURO-ENDOCRINE SYSTEMS

The human body is a unit that functions as an entity, although it is composed of many smaller units which interact and affect each other. Neither could the organism survive nor the race be perpetuated if man did not make adjustments to his environment. Any structure which is composed of many cells, tissues, organs, and mechanisms must have some central control that integrates their activities into a functioning whole. In the human body, the integrating and controlling mechanisms are the nervous system and the endocrine, or ductless, glands which secrete chemical substances called *hormones*.

We shall treat these two systems together for an important reason. These systems are closely related in their control of behavior. If certain endocrine substances are not produced in childhood, the normal development of the nervous system is interrupted and if the individual has certain experiences that "upset" the nervous system, certain endocrinal functions will be disturbed. Poor learning ability appears in individuals suffering from a thyroid deficiency as well as individuals having a "poor" cerebral cortex. There is also some evidence which shows that the nervous system "takes over" some additional functions in case of certain endocrine failures and vice versa. In brief, the integration and control of behavior seems to be a matter of these two systems functioning conjointly rather than independently.

Man's Superiority Due to His Nervous System

Without the nervous system man would be an inert mass of protoplasm without the ability to see, hear, smell, taste, touch, use language, reason, remember, or act. Man's supe-

riority over other living organisms is due to his highly coordinated and complex nervous system. In invertebrate life, the nervous structure appears to be relatively simple. The behavior of invertebrates consists of immediate responses to stimuli. The behavior is relatively fixed and lacking in originality. A worm, for instance, can only manifest a protest by squirming movements when it is disturbed. Invertebrates lack ability of voluntary choice when alternatives are presented. Vertebrates, on the other hand, have a more highly developed nervous system. They can modify and control their behavior within certain limits. A dog recognizes his master; he can be taught to do many tricks, but his reactions as compared to those of man are limited.

In man, the nervous system is a highly developed mechanism. His brain is so complicated a structure that his behavior is not limited to immediate response to stimuli or fixed patterns of conduct. Unlike the worm, his responses do not consist of mere tropistic activity or movement when he is disturbed. He is able to remember, think, and choose before he makes an overt act. His behavior is variable in that he may react in several ways. Because of his brain structure, he himself can often determine which course he will follow. He is not controlled completely by his environment; his behavior is the result of the interaction of a creative intelligence and a total environment. If an individual becomes lost in a city he does not remain lost. He makes an attempt to determine just where he is and how he can reach his destination. His brain (cerebrum) gives him the power of intellect, reason, ideas, appreciation, choice. A plant cannot escape its environment; an animal cannot control it but it can escape to a more favorable one; man modifies it according to his own choosing and evaluation.

Nervous Tissue

Nervous tissue is composed of many billions of neurons (nerve cell bodies and their processes) and many glia-cells which serve as a connective tissue in holding nerve masses together.

Nerve tissue possesses these characteristics or qualities:

irritability, conductivity, plasticity, and *integration.* It possesses excitability or irritability, the quality which makes it responsive to stimuli presented to the sense organs. If the rods and cones (specialized nerve cells) in the retina of the eye were not sensitive to light waves, there would be no energy liberated, no impulse transmitted over the optic nerve to the brain, and consequently no visual experience (response).

Man's sense organs determine the nature and variety of stimuli to which he can respond but it is the nervous system that mediates or translates the energy or impulses into experience, adjustment, response. The power to transmit or conduct nerve impulses from sense organs to brain, cord, or other centers, and from these centers to muscles and glands is called conductivity. There could be no adjustment if impulses were not conducted. Conductivity of impulses may result in some form of activity or its inhibition. It may be of a reflex or instinctive character or be highly purposeful. It may be immediate or delayed. It may be in the form of an overt act, an idea, a feeling, an ambition, or an attitude. Its influence may be fleeting or lasting. Such are the varieties and complexities of human behavior.

A most significant characteristic of nervous tissue is its plasticity, that is, its modifiability and retentiveness. This quality implies that the structure or organization of brain tissue can be changed or modified and that the human organism is capable of learning and profiting from experience because of this property which is basic to all learning and education.

Nervous tissue also possesses the property of integration. The nervous system integrates and controls all human activity or behavior. The human brain has its complete number of cells at birth although many of these are in an immature form, or certain fibers are not sheathed, or the cell processes or fiber extensions are not fully developed. Normal development of brain cells depends upon such important factors as secretions of the ductless glands, nutrition, play activity, rest, sleep, and other appropriate environmental stimuli. Normal growth of the nervous system is attended by a corresponding development in behavior. A child can-

not learn effectively certain subjects at four whereas at seven he can learn them readily. The explanation is due in part to the undeveloped condition of his nervous system at four, and in part to his lack of adequate experience as a background, and his mental immaturity.

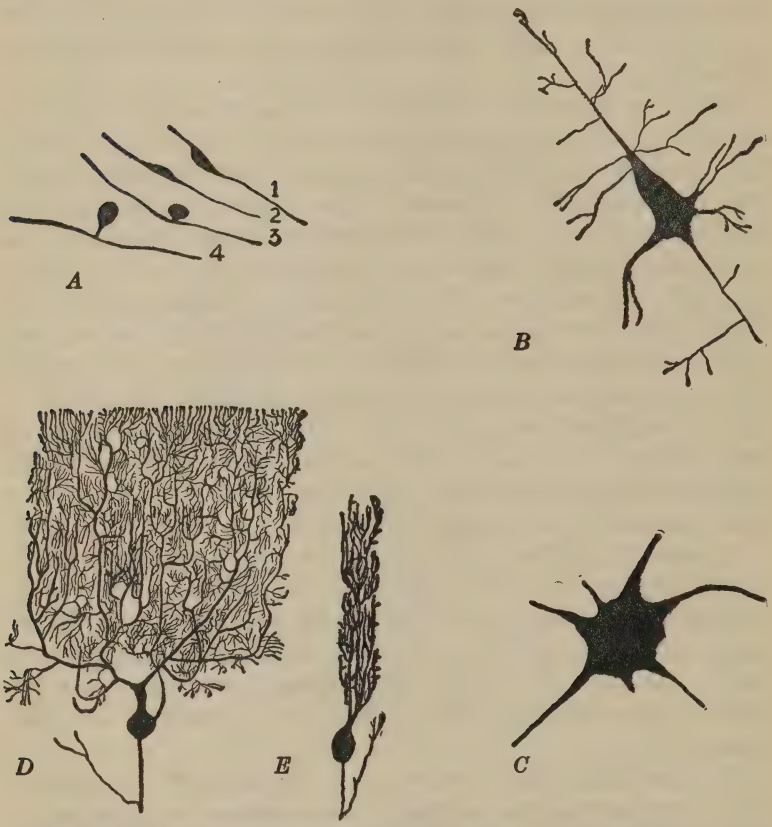

FIG. 22.—TYPES OF NEURONS. *A,* Cell of dorsal root ganglion; 1, 2, 3, 4 show how it gradually develops into a unipolar cell. *B,* Pyramidal cell of cerebral cortex. *C,* Motor cell of spinal cord. *D* and *E,* Purkinje cells of cerebellum. *E,* Profile view. From Kimber, Gray and Stackpole (11th ed.), *op. cit.,* Fig. 131. By permission of The Macmillan Co., publisher.

One of the most important facts in all psychology is that memory, perception, association, imagination, reason, voluntary choice, and intelligence have a physiological basis. Just what this basis is has not been conclusively demonstrated.

FIG. 23.—THE GENERAL ARRANGEMENT OF THE CEREBROSPINAL NERVOUS SYSTEM AS VIEWED FROM BEHIND. From Williams, *Healthful Living*. By permission of The Macmillan Co., publisher.

The nervous system is composed of an enormous number of nerve cells with their threadlike fibers (neurons). Each of these must connect with others so impulses may reach their

destination. Fine branches of one fiber are interlaced with branches of another in such fashion that they fit together but they never adhere. This functional point of connection is called a *synapse*. Inasmuch as these fibers are not continuous, an impulse will need to cross from one fiber to another by way of this connection. A nerve impulse arising at some point may need to travel over many synapses before a response is made. The impulse finds resistance at the synapse because of a fine membrane separating one fiber from another. This is a significant point in that this membrane offers a certain amount of resistance to impulses. The resistance is greater at some synapses than it is at others. An impulse may find one synapse difficult to cross; therefore, its "path" may be deferred, or the impulse may travel to another synapse that is less resistant. At birth, the resistance in certain "pathways" is quite low, e.g., the sucking movement when the lips are stimulated. The resistance in other "pathways" is quite high but it can be lowered by inner maturing and experience. When this resistance has been lowered, new "patterns" are said to have been developed. This explanation, however, is highly theoretical.

Suppose an individual wishes to learn some new skill such as swimming. At first his movements are not coördinated and he is conscious of each motion. With continued practice on certain strokes and proper breathing habits, he is able to swim with as much grace and ease and with as little thought as when he walks. This process has involved the breaking down of resistance at certain synapses. When the skill has been perfected, a new "pattern" of functioning has been formed in the nervous system. Learning has resulted from the practice regardless of the explanation.

This lowering of resistance at synapses is thought by some to be the basis of all memory and learning. Through use, resistance at synapses is not only decreased but it can also be increased. If, for example, one wishes to "break a habit" he must use a great amount of effort at first in order to prevent impulses from traveling over the old path. The lower the resistance in that particular pathway, the more difficult the habit is to "break." Increasing resistance is sometimes more difficult than decreasing it.

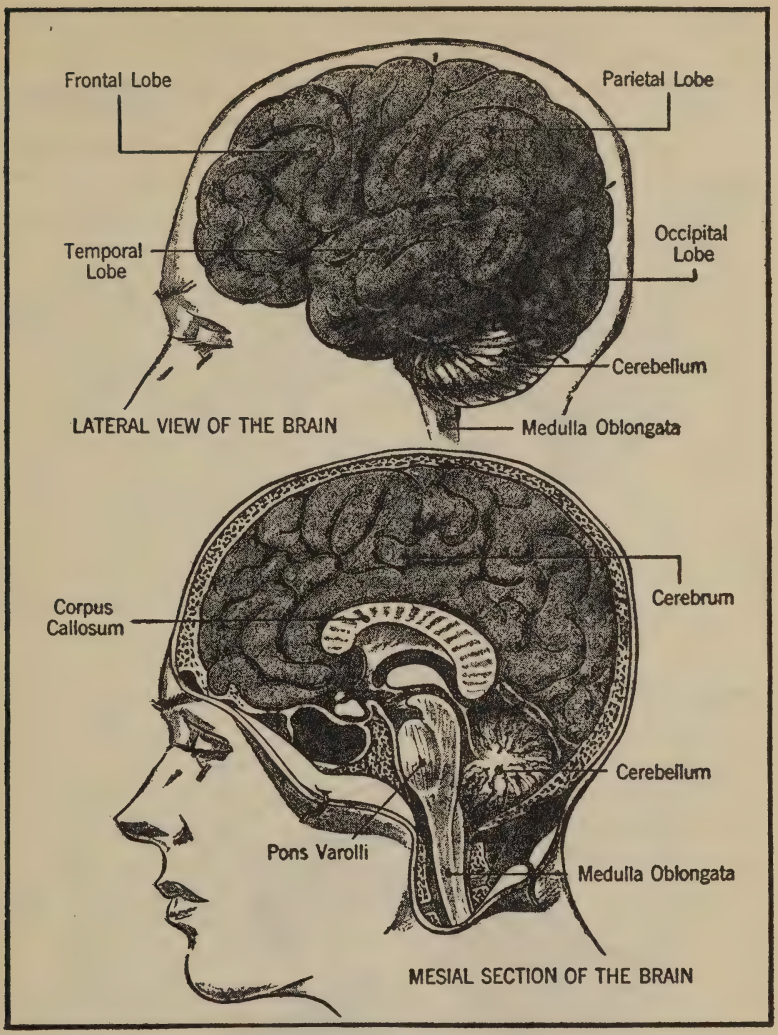

FIG. 24.—LATERAL AND MESIAL VIEWS OF THE BRAIN. (Courtesy of H. W. Fink.)

THE FORM AND FUNCTION OF THE NERVOUS SYSTEM

The human nervous system comprises two main divisions: the *cerebrospinal* and the *autonomic.* Each of these has its subdivisions and functions but neither of the major divisions is completely autonomous in its functioning.

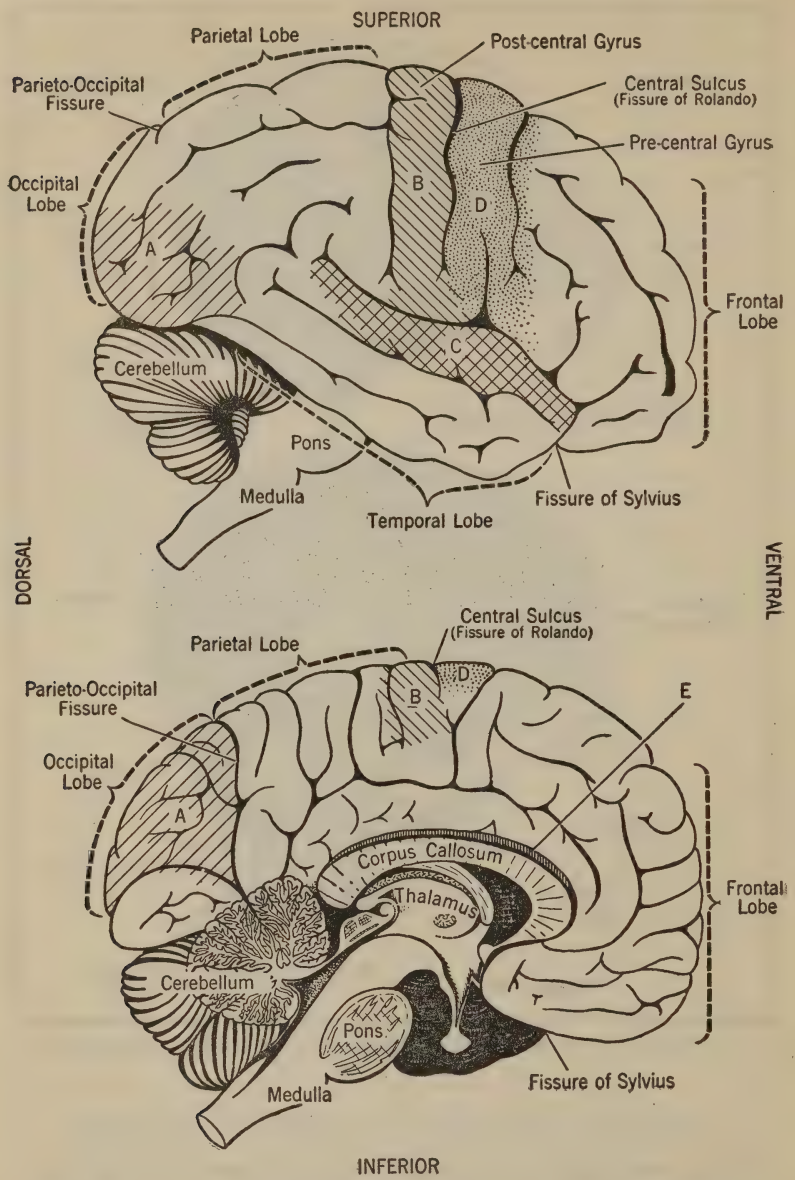

FIG. 25.—*Upper.* LATERAL VIEW OF THE RIGHT CEREBRAL HEMISPHERE. This schematically shows the important fissures, lobes, and projection centers of the cortex, the medulla and pons of the brain stem, and the cerebellum. The dotted area (*D*) represents roughly the origin of the

The cerebrospinal division includes the brain (cerebrum, cerebellum, medulla, thalamus, pons and the ventricles) the spinal cord, and the various motor and sensory nerves known as the cranial nerves (12 pairs) and the spinal nerves (31 pairs).

The autonomic division consists of three main subdivisions: the cranial, sacral, and sympathetic. It is in reality a large number of ganglia interconnecting nerves, and plexuses or webs of nerves found in the trunk but with fibers extending to other parts of the body. The cerebrospinal division effects the major adjustments of the organism to the environment whereas the autonomic division is primarily responsible for the coördination of the internal or physiological functions so essential to life itself. However, complete integration of the body and its adjustment requires the coördination of these two major systems—not their independent action.

The brain.—This is the master organ or tissue of the body, occupying the interior of the skull. It is protected not only by the cranium but also by three membranes, known as the *meninges* (the *dura mater,* the *arachnoid,* and the *pia mater*). The brain is not a solid mass all of one character. In fact, its surface is very irregular owing to many convolutions and fissures. The total number of neurons are present at birth, although they increase in size until about age seven when the brain attains "maturity" in size and weight. New "pathways" between neurons, however, are made throughout life as a result of experience or learning. The outer layer or *cortex,* about ⅕ of an inch in thickness, is grayish in color due to the numerous neuron cell bodies it contains. The

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main efferent tracts conducting impulses from the cortex to the lower coördination centers and cross-hatched areas (*A, B,* and *C*) represent projection areas for vision, somethesis, and audition, respectively. Unidentified parts are integration areas. *Lower.* MESIAL VIEW OF THE LEFT CEREBRAL HEMISPHERE. This figure shows certain structures of the brain stem, the cerebellum, and the cerebral cortex. The thalamus, corpus callosum (composed of nerve fibers connecting the two hemispheres), and part of the projection area for olfaction and gustation (*E*) are visible. The essential area of smell and taste, which is not shown in either figure, is the uncus, situated in the hippocampal convolution on the inferior surface of the temporal lobe. From Douglas Fryer and Edwin R. Henry, *An Outline of General Psychology* (Revised). (New York: Barnes and Noble, 1937), p. 155.

rest of the brain substance is whitish in appearance and is composed mostly of nerve fibers.

1. *The cerebrum.*—The upper part of the brain is divided longitudinally into so-called hemispheres. The function of the cortex of the cerebra is to enable the organism to make superior adjustments, involving all of the senses, language or

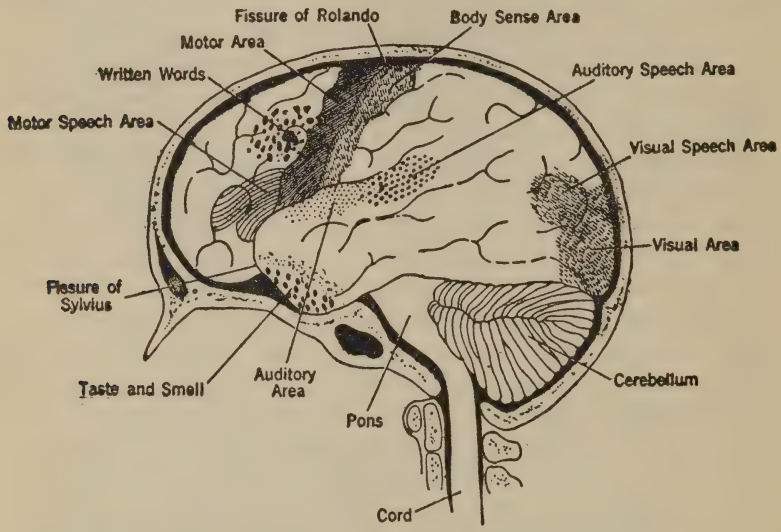

FIG. 26.—DIAGRAM SHOWING LOCATION OF SPECIAL FUNCTIONS OF THE CORTEX OF THE BRAIN. The most definitely localized functions are those of sight, hearing, taste, smell, and muscular movement. There appears to be no single center for words but rather a center for seen words, a center for heard words, a center for spoken words, and a center for written words. The motor speech center is presumably present only in the left hemisphere in right-handed persons and only in the right hemisphere in left-handed persons. In the motor area are specific centers for controlling the upper and lower extremities, trunk, eyes, head, facial muscles, tongue, larynx, chewing and swallowing. There are centers for the movements of the foot, elbow, hand, fingers, shoulder, upper part of face, lower part of face, and so on. (Adapted from Douglas and Holland.)

speech, and the mental processes of memory, imagination, reasoning, intelligence, voluntary action, and the like. The cortex performs an integrating action by which it brings into a unified organized whole all conscious processes and behavior. Thus, the cerebrum of the brain is the organ of consciousness, the center for learning, the organ of integra-

tion for unifying complex responses, and the organ which makes possible mental development, intelligent behavior, and all kinds of adaptable and creative activities.

Brain differentiation or cortical localization.—The brain always functions as a unit, yet some of the cortical areas are differentiated and have special functions which, however, are dependent upon the brain as a whole. That certain areas of the cortex perform sensory functions and other areas motor functions is generally accepted by clinical neurologists and physiological psychologists.[1] Lesions of the motor cortex reveal themselves by motor paralysis in the corresponding muscle groups; destruction of the occipital lobe results in blindness; and temporal lobe injuries, in sensory aphasia.

That there is any specific cortical area that is the seat of intelligence and learning, seems open to question. Some of our investigators in this field believe that cortical tissue seems to function as a whole in learning and intelligence and not as separate units. They report that disturbances attending destruction of brain areas are found to be correlated with the amount of tissue left. Some of the activities lost by such injuries have been relearned which seems to suggest that the area of the brain cortex which was destroyed was not a specific area associated with a particular learning. Other workers, however, are dubious of these extreme claims. At the Western Reserve University Medical School, Dr. Loo studied the pattern of the gyri of the various regions of the cortex of a number of brains and found the following to be essentially true:

The region of the brain which corresponds to what we term the central visual cortex is relatively completely evolved at birth. The same thing is true of the region in the temporal lobe where hearing is localized and also of the region of smell. In other words, these regions do not differentiate any after birth. However, in the frontal lobe the pattern keeps on expanding and unfolding until about two years. Then the temporal pattern keeps on unfolding until about six years. There is one area, the in-between area between the temporal and the parietal lobes, which never reaches a termination of its pattern forma-

[1] These areas are the motor area, the sensory area, the visual area, the auditory area, the olfactory and gustatory areas, and the speech and writing areas.

tion. When we think about the frontal lobe, we think about memory, generally, and when we think about the parietal lobe, we think ordinarily about conscious thought and association. This little area which I said never completely unfolds throughout life is the area where we ordinarily think about judgment. In other words, the child at birth has as completely developed visual, smell and auditory regions as he ever has. That process is mature. Memory becomes mature at about two to three, and conscious thought and reasoning come to maturity by six and ten. Judgment, on the other hand, goes on developing throughout life.[2]

While Dr. Loo's work on brain patterns shows rather conclusively that certain regions complete their development at certain times and other regions at other times, there is some doubt about what these regions mean. They might mean a brain configuration or functioning pattern perhaps involving many centers or even the whole brain. Also, memory, reason, and judgment may be present at the same time in the child but at different levels of development at any given chronological age until full maturity is attained.

2. *The cerebellum* consists of two hemispheres, much convoluted, and lying beneath the cerebral hemisphere. This organ functions normally in the coördination of muscular movements and especially movements of locomotion. It shares with the retina of the eyes, the kinæsthetic (muscle) and cutaneous (skin) senses, and the semicircular canals in the internal ear in coördinating the reflex responses in equilibrium and balance. It also aids in maintaining muscle tonus and in giving a smoothness or harmonious balance to movements.

3. *The medulla* is a thickening at the top of the spinal cord. Although continuous with the cord it lies at the base of the brain in the cranium. It serves as a passageway for the conduction of impulses between the brain and cord. It is the seat of reflex connections between the sense organs and muscles of the head, and as such it controls the pupillary reflex, sneezing, coughing, and winking. It is also a center

[2] T. T. Zuck, "The Relation of Physical Development to Mental Expansion," in *What Science Offers the Emotionally Unstable Child,* Proceedings of the Third Institute on the Exceptional Child. (Langhorne, Pa.: Woods School, October, 1936), p. 10.

governing the activity of many vital organs as the heart, lungs, blood vessels and for controlling the corresponding bodily functions as the respiratory center, the cardiac center, and the vasomotor center.

4. *The thalamus* is an egg-shaped body under the cerebrum. It serves as a relay center for all sensory neurons, except the olfactory, which have synaptic connections here with other neurons which continue up to the cerebral cortex. It is also a center for emotion.

5. *The pons Varolii* consists mostly of fibers of nerves having connections with the various parts of the cerebrum, cerebellum, and medulla, the two halves of the cerebellum, and one cerebral hemisphere and the cerebellar cortex of the opposite side. The pons also includes various nuclei, which act particularly as relays for the cranial nerves.

6. The four *ventricles* comprise the cavity of the neural tube. These ventricles and their connecting channels may be seen in encephalograms.

The *spinal cord* is an organ about 18 inches long, protected and nourished by a thick membrane called the meninges and placed within the bony spinal column. Its functions include (1) making possible spinal reflexes which for the most part are not subject to conscious control, such as jerking a hand away from a hot object, and (2) distributing nerve impulses upward or downward.

The *autonomic* division consists of numerous ganglia, chains of ganglia, and plexuses scattered through the head and trunk of the body. This division is a part of the motor system and it is under some control of the cerebrospinal system. While enervated by the cortex, it is not under voluntary control. The *cranial,* or upper, part includes the fibers leading from the brain stem to the organs of digestion, liver, heart, lungs, and pancreas. The *sacral,* or lower, part includes fibers leading to organs of reproduction and excretion. The *sympathetic,* or middle, portion includes fibers leading to all organs included in the cranial and sacral parts and it acts in opposition to the activities of these parts. The cranial-sacral parts are active in digestion, assimilation, and certain other organic activities. The feeling tone that accompanies cranial-sacral functions is mild and satisfying.

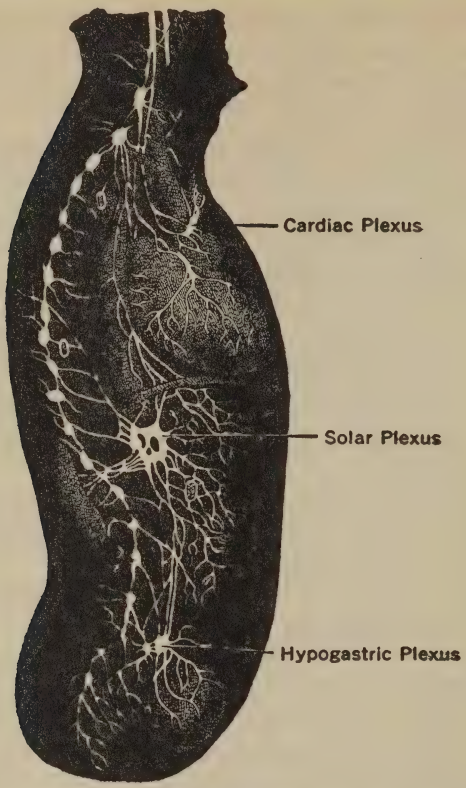

FIG. 27.—DIAGRAM OF TRUNK SHOWING ONE OF THE TWO ROWS OF AUTONOMIC GANGLIA NEAR THE SPINAL COLUMN AND THE PLEXUSES. From Williams, *Healthful Living*. By permission of The Macmillan Co., publisher.

The sympathetic part is active in strong emotions. Its antagonistic or balancing action to the other two parts is important for a smoothly running organism. In times of an emergency, however, the sympathetic is given "right of way" with the result that all possible energy is mobilized to meet the crisis through the stimulation of the adrenal glands, the enervation of smooth muscles, and the consequent liberation of glycogen and making it available for immediate use.

THE NERVOUS SYSTEM IN HEALTH AND ILLNESS

In health, the nervous system functions in a smooth manner. All physical and mental activities are nicely integrated

and the individual is at peace with himself and the world. But all life is not a bed of roses. The organism may be subject to diseases, injuries to the brain, drugs, unwholesome social and economic conditions, or unfortunate experiences. As a consequence, the structure and functioning of the nervous system is directly or indirectly changed.

FIG. 28.—BRAIN CELLS AT REST, IN ACTION, EXHAUSTED (CRILE). From Williams, *Healthful Living*. By permission of The Macmillan Co., publisher.

The infant having a deficient thyroid gland or born of a mother having a deficient thyroid organ usually shows signs of mental arrest. Unless treated, such a child will not develop normally because the thyroid secretion is indispensable to proper development of the brain processes in early life. Injuries to the brain may result in unconsciousness, or the loss of certain functions. If the injury was sustained in infancy, there is some likelihood of the injury to brain tissue or the resultant hemorrhage affecting mental development. Modern medicine has greatly reduced the hazards of brain injuries suffered at birth, as well as later head injuries. The toxins and poisons produced by certain diseases and drugs disturb the nervous system and affect the mental processes. The patient may become unconscious, go into a coma, have delirium, or become mentally unbalanced. Even bromides,

when taken for long periods of time, usually on one's own prescription, account for five to twenty per cent of all cases of neuroses. Unless properly treated, the chronic alcoholic may undergo certain personality changes. He often becomes suspicious, jealous, untrustworthy, talks excitedly, and becomes less self-critical. Brain tumors affect the functioning of the brain and in advanced cases great personality changes may be noted.

Syphilis, encephalitis, poliomyelitis and meningitis attack nerve tissue. Either directly or indirectly as a result of these diseases which involve a degeneration of nerve tissue, changes in behavior or personality may be noted. Epilepsy and the various insanities discussed elsewhere involve the nervous system directly or indirectly. In some of these diseases, there is a definite brain pathology, whereas in others, none has been detected to date, which means the difficulty may be inherent in the general body chemistry or perhaps in some undiscovered pathology of the brain itself.

There is abounding evidence from a variety of studies of the intimate relation of the nervous system to physical growth, mental development, emotional stability, fidelity of memory, dependability of judgment and control of one's behavior. Behavior abnormalities observed during the lifetime of the patient correspond to diseased or degenerated tissue revealed by the autopsies. Injuries to the brain or cord sustained in accidents are often accompanied by behavior abnormalities—changed personalities, mental and emotional disturbances. Tumors and lesions have been found associated with *aphasias* (loss or disturbance of speech), with *apraxia* (inability to coördinate movements for carrying out activities that had been performed previously), and with *agnosia* (the inability to know or recognize objects). They may be either predisposing or exciting causes of these aberrations.

The inherited structure and organization of the nervous system is of major importance, but as we have seen, so too are all the conditions under which neural tissue functions. The external and internal environments, especially the hormones, vitamins, and other chemical and physical agents, are of signal importance in changing behavior. Caffeine, curare, alcohol, hashish, absinthe, mescal, and many other drugs

cause distinct changes in behavior. Some are depressants; others, stimulants. Similar to drugs in their action are various toxic agents, either introduced into or produced within the body. Many of these are the result of a specific infection or a deranged metabolism. Syphilis and lead poisoning influence the behavior not only in the adult but also in the offspring under certain conditions. Chronic infections from the teeth, tonsils, sinuses, carbon monoxide poisoning, and toxins from such diseases as tuberculosis are often attended by mental disturbances or personality disorders. Likewise, vitamin deficiencies have been found to be reflected in behavior, since they affect neural performance. Vitamin A influences visual performance. Vitamin B deficiency is characterized by a severe neuritis, clearly indicating a neural involvement. Vitamin D is linked with calcium metabolism and a deficiency of this vitamin manifests itself by an increasing irritabilty. Calcium disturbances have been observed to be associated with eidetic or photographic memory. Pellagra, which in advanced stages results in a psychosis, is a vitamin deficiency disease.

Neurological signs.—In the examination of patients for the purpose of determining if the nervous system is functioning normally as in health, the examiner invariably checks on certain reflexes. The patient is asked to cover one eye with his hand while the examiner holds a pocket light to the other eye and notes the response. Normally, the pupil will become smaller in light and larger in the dark. If this pupillary reflex is lacking in either or both eyes, it may be indicative of some brain pathology. The paretic has lost this reflex. The patient may be asked to cross one knee over the other, close his eyes, and make tight fists while the examiner taps with his hand or rubber hammer just below the kneecap. Unless some nervous system pathology is indicated, the foot will swing up a few inches. In certain neurological cases, the patient is found to be lacking in this knee jerk reflex or to have it in an exaggerated form. The patient may be asked to extend his arm and then bring his forefinger somewhat in a circle to his nose, or to stand with feet together and eyes closed. If he can do these things he seems to have good coördination but if he fails, further tests should be

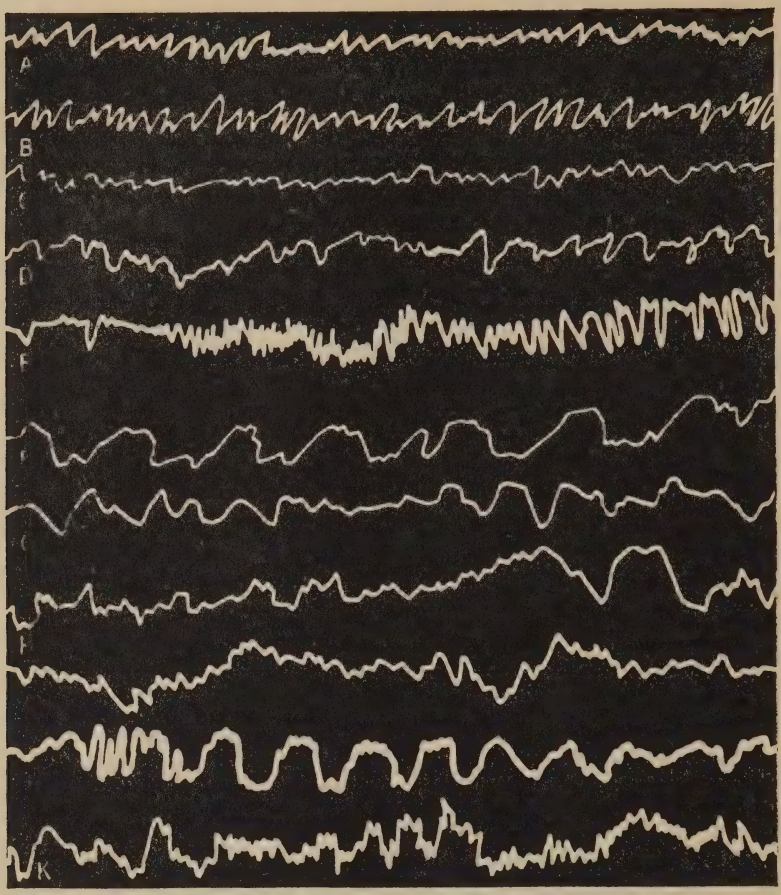

FIG. 29.—ELECTROENCEPHALOGRAMS OF NORMAL AND ABNORMAL SUBJECTS. *A*, *B*, and *C* show forms of Alpha Waves. In *A*, the electrodes were placed in the frontal region and the subject's eyes were closed. In *B*, the electrodes were placed in the occipital region and the subject's eyes were closed. In *C*, the electrodes were placed in a region behind the ear. In *D*, positive square topped or spike wave forms are noted. These are characteristic of abnormal physiological brain function, although the condition is not necessarily permanent. In *E*, positive spike formation may be observed. It denotes a transient physiological disturbance of the brain, although such abnormal activity is not permanent. In *F*, may be observed abnormal spike and dome form, indicating a transient brain abnormality. In *G*, we have an example of Delta wave activity usually seen in subjects who are co npletely confused, vague, or otherwise impaired in consciousness. In *H*, we have a dysrhythmic type of wave. There is marked disorganization of rhythm and pattern. Alpha activity is replaced by Delta activity. This

given. Disturbances of a neurological character impair body coördinations as we have seen.

The Endocrine Glands and Behavior

The human organism must be regarded as an entity at all times. This whole is composed of many organic and psychological mechanisms and systems, interacting and affecting each other. A deviation from the normal of one set of organs disrupts or disorganizes the whole organism. In man, the integration of organs and behavior is brought about by the nervous system and the ductless glands (glands of internal or endocrine secretions). We have seen how the nervous system performs some of its major functions. We now turn to the system of chemical coördinators—the *endocrines.*

The nervous system and the endocrine system are intimately related. Neither has much significance apart from the other. All endocrine organs are directly under nervous control, although the nervous system may or may not be under the influence of the endocrines. The close relation of the endocrines with the autonomic nervous division will be discussed in a later section. It will suffice here to point out that these two great systems normally coöperate in the regulation of bodily functions and the integration of behavior.

The endocrine system consists of a number of glandular masses located in various parts of the head and trunk of the body. Unlike the sweat glands, the tear glands, and the digestive glands, the endocrine glands have no ducts or tubes but deliver their secretions directly into the blood as it passes through them. These chemical substances, or *hormones,* are distributed by the blood stream to the various parts of the body where they bring about various changes such as accelerating, retarding, or otherwise influencing the structure, organization, activity and functions of these parts or of the whole organism. The changes wrought are both physical

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is a usual form in epilepsy. In *I,* the electroencephlogram is that of a subject who is aware of his surroundings although his brain functions abnormally in certain respects. In *J,* the brain wave indicates marked damage to brain substance; and in *K,* the abnormal patient is overactive mentally although conscious. (Courtesy of Alexander Apisdorf, M.D., Brooklyn Technical High School.)

and mental. That is, both organic processes and psychological processes are influenced. The influence of the hormones on behavior begins long before birth. They affect the differentiation of tissue, nutrition, physical growth, sexual activity, brain development, and mentality—the whole organism or personality. The glands of internal secretion can modify physical growth and functioning directly by means of the catalytic activity of their hormones, or indirectly by contributing to a pattern of development or abnormal state which influence the psychological processes.

The direct effect of endocrinal deficiencies on an individual's behavior may be intensified or changed as a result of his attitude toward the results of such deficiencies. If marked changes in growth, structure, or personality have resulted, he may develop various personality maladjustments. For instance, a child with a pituitary deficiency and the concomitant passive, submissive, phlegmatic personality may become dominant, aggressive and antisocial because he resents people knowing about his structural defects.

Some endocrine glands produce only internal secretions. The pituitary, thyroid, parathyroid, and adrenal glands are of this type. Another group, however, produce both internal and external secretions. The gonads, or sex glands, and the pancreas belong to this class. Even the liver and the duodenal lining of a portion of the small intestine may be included. There is also a third group of organs which is not strictly glandular in structure but which appears to serve some chemical function. The pineal body, the thymus, the spleen, the carotid body and the coccygeal gland are of this character but we know relatively little of their real functions.

The individual's psychological make-up is closely associated with his constitutional morphology. The endocrine glands play an important rôle in the mechanism of constitution. A study of the constitution gives us leads in understanding personality. The thyroids, adrenals and parathyroids are important factors in the physiologic constitution since they influence the physiologic processes by controlling metabolism and acting through the autonomic nervous system.

The endocrine factors in the psychological make-up are the thyroids, parathyroids, pituitary, adrenals, and gonads. In

the emotional sphere, the thyroid, parathyroids, adrenals, and the particular glandular arrangement for the female sex, play a rôle.

The functions of the various glands, while different, are often interrelated. In certain instances they are antagonistic,

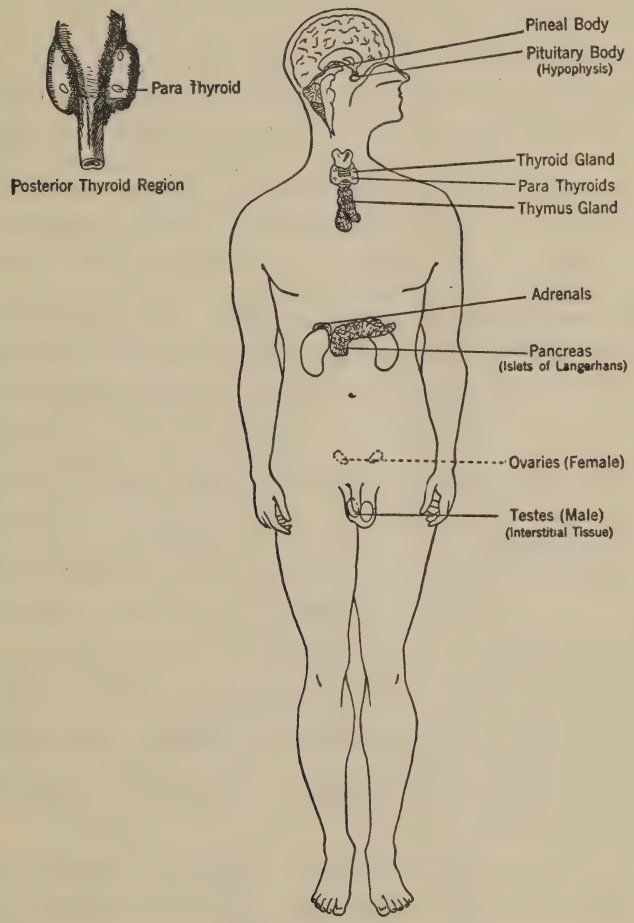

FIG. 30.—SHOWING LOCATION OF THE ENDOCRINE GLANDS.

but in other instances the chemical agents from different glands facilitate each other. Not infrequently, one gland may take over some of the functions of another gland in case of disease, injury, or its removal.

Endocrinology, the science of the endocrine glands, is far from being a closed book. Many of the data are conflicting, and the mechanisms so delicate and intricate that we may be said to have made only a beginning. However, certain data are fairly well substantiated and as such they can be accepted with little or no qualification.

Types of disorder.—When glands are functioning normally, they produce the proper amount of secretion needed by the various organs of the body. On the other hand, if oversecretion (*hyperfunction*), or undersecretion (*hypofunction*), or an abnormal or pathologically altered function (*dysfunction*), occurs, disturbances in organic processes and in the individual's behavior are noted. Often the deviations from normal are only slight or insignificant, but not infrequently marked deviations do occur.

The pituitary gland, or hypophysis.—The pituitary body is an organ about the size of a large pea which hangs down from the base of the brain upon a tiny stalk and which is situated in a depression or pocket at the base of the skull (*sella turcica*). The pituitary gland, consisting of an anterior lobe, intermediate, or middle lobe, and a posterior lobe, secretes about a dozen specific powerful hormones [3] which control in a most remarkable way all activities of the other glands of internal secretion, and influence growth, weight, total metabolism, pulse, reproduction, sexual development, mental activity and many other functions. The pituitary influences emotions indirectly through its action on the gonads and by the activity of the thyrotropic and adrenotropic hormones. It is believed to influence kindness, sympathy, and other tender emotions. Hence, directly or indirectly, the pituitary gland influences every organ, mechanism and cell in the body.

The pituitary gland has been called the master gland, although this concept is questioned by Severinghaus, Frank, and other authorities. "Present information does not warrant attributing this importance to the pituitary. The abso-

[3] Since the number of cell types in the pituitary is very limited, it seems possible that the number of true pituitary hormones must be limited. This suggests the possibility that each true hormone has several different physiological effects.

lute necessity for adrenal cortex, the Islets of Langerhans, and the way in which the thyroid causes changes, are sufficient for denying this mastery." [4] We know little or nothing about the functions of the intermediate or inner lobe. The posterior lobe influences the kidney, contraction of the blood vessels, lower part of the digestive tract, uterus, and other smooth muscle. The anterior lobe stimulates the gonads, influences stature, skeletal growth, and general growth, controls the mammary glands, plays a rôle in sugar metabolism, and controls thyroid secretion and the activity of the cortex of the adrenals.

Hypoactivity of the anterior lobe.—Pituitary deficiency in children results in a type of dwarfism. The mental activity may not be retarded although there is no development of the primary and secondary sex characteristics. A deficiency of the anterior hormone may develop in the adult. The result is Simmond's disease or *infantilism.* This condition is characterized by premature senility, weakness, emaciation, mental lethargy, loss of pubic hair and teeth, low basal metabolism, somnolence, and hypertension.

Hyperactivity of the anterior lobe results in *gigantism* if it develops before puberty; and *acromegaly* or enlargement of the extremities (hands, face, feet) in the adult. In acromegaly there is an increased basal metabolism, frequent headaches, and a low carbohydrate tolerance.

Hyperactivity of the posterior lobe.—This disturbance is accompanied by adiposity of the girdle type and low body temperature. Hypoactivity of both lobes seems responsible for Frölich's syndrome, which is characterized by an immaturity of the genital organs, marked deposits of fatty tissue, increased tolerance for carbohydrates, low body temperature, and a low metabolism rate. One disorder of the anterior lobe is associated with emotional instability. When this disorder involves a retarded genital development, the boy has submasculine physical stigmata and as a consequence, he develops feminine emotional reactions. The patient may have a mother complex or he may develop into a bully as a compensation.

[4] E. L. Severinghaus, *Endocrine Therapy in General Practice* (Chicago: Year Book Publishers, Inc., 1938), p. 189.

The thyroid.—This gland consists of two maroon-colored lobes or masses connected by a strip of tissue and lying in front and on each side of the windpipe close to the larynx and below the Adam's apple. This gland secretes a complex organic hormone known as *thyroxin* whose characteristic constituent is iodine. This internal secretion, under the control of the anterior lobe of the pituitary, aids in the control of metabolism and the normal development and functioning of the body. In appropriate (normal) amounts, this secretion promotes physical growth, brain cell development, and mental functioning. One form of hyperthyroidism is called *exophthalmic goiter* or Graves' disease and the other *adenomatous goiter with hyperthyroidism.* "In exophthalmic goiter the condition is accompanied by gastro-intestinal disturbances, insomnia, loss of weight, rapid pulse, palpitation, tremor, and excessive perspiration. The lid space is widened, and the eyes protrude. The basal metabolic rate increases markedly." [5] Hyperthyroidism and exophthalmic goiter are frequently characterized by crying spells, emotional outbursts, increased sensitiveness, and sometimes egomaniac or megalomaniac manifestations.

In adenomatous goiter with hyperthyroidism, the symptoms appear sometime after the glandular enlargement. Aside from the eyes not protruding and a less marked rate in basal metabolism, the symptoms are much the same as in exophthalmic goiter.

Hypofunctioning may be noted in varying degrees among both children and adults. The disorder is called *myxœdema* in adults. This acquired form of thyroid deficiency manifests itself in a lowered body activity, a lessening of mental activity, puffy and swollen hands and forehead, a slowing down of speech and gait, coarse and dry skin, falling hair, low basal metabolism rate, mental depression, subnormal sensitiveness, and usually a lowered emotional threshold.

Endemic goiter due to an undersupply of iodine in the diet may result in an enlargement or hypertrophy of the gland in an attempt to compensate for the iodine insufficiency. The symptoms are about the same as those of mild

[5] Esther M. Greisheimer, *Physiology and Anatomy* (Philadelphia: Lippincott, 1939), p. 617.

hypothyroidism. Both myxœdema and endemic goiter respond to appropriate thyroid therapy. "Puberty hyperplasia, enlargement due to cell increase, of the thyroid is one of the most common of glandular disorders in children, and one of the most common causes of emotional instability during the adolescent period." [6]

Hypothyroidism in children produces varying degrees of disorder from a mild to a much more serious condition. The mild cases are usually dull, sluggish, dry-skinned, pasty-looking, apathetic. They learn slowly, move about slowly, seem sleepy, have low sensitivity of sense organs, lowered basal metabolism, a phlegmatic emotional tone, and an arrested intelligence. The individual is also slow thinking, irritable, shows some speech defect, and is not amenable to the ordinary rules of conduct. In young children we invariably find hypothyroidism manifesting itself in a triad of symptoms: motor restlessness, carelessness and destructiveness, and speech disturbances.[7] Such patients usually respond to appropriate glandular therapy.

Hypothyroidism may produce mental deficiency. The degree of mental retardation depends on the degree of thyroid deficiency. The greater the deficiency, the more marked is the mental retardation. This relationship is observed in cretinism.

Cretinism is due to the congenital absence or maldevelopment of the thyroid glands in the young. Some authorities distinguish between true cretinism which is found in goiterous regions and due to a deficiency in both the pregnant mother and the child, and *infantile myxœdema* or sporadic cretinism which occurs in children of parents with normal thyroids and which is due to a pathologic condition. The child's symptoms may not show up *in utero,* at birth, or when nursing. Ordinarily the signs appear first at about six

[6] A. S. Blumgarten, "The Endocrine Aspects of the Emotionally Unstable Child," Pamphlet No. 3, The Scientist Looks at the Emotionally Unstable Child—Part I, of the *Child Research Clinic Series* (Langhorne, Pa.: Child Research Clinic of the Woods Schools, 1935), p. 19.

[7] L. A. Lurie, "Endocrinology and the Understanding and Treatment of the Exceptional Child," in New Contributions of Science to the Exceptional Child, *Proceedings of the Fourth Institute on the Exceptional Child* (Langhorne, Pa.: Child Research Clinic of The Woods Schools, 1937), p. 11.

months of age. In general, the cretin's development is slow, there is abundant subcutaneous fat, the skin is thickened and cold or cyanotic. The tongue and lips are large, the tongue protrudes from the mouth, the skeleton remains small, the teeth are late in eruption and chalky; the abdomen is prominent, the basal metabolism low, and mental development retarded. When puberty arrives, the secondary sex characters do not appear and the proper development of the body does not occur. By means of a basal metabolism test, the function of the thyroid gland can be readily determined. Even infants in whom one suspects hypothyroidism can be tested. In cases of hypothyroidism the physician usually prescribes thyroid in the proper dosage to bring the metabolism up to normal. As this is not a cure but replacement measure, the treatment may need to be continued indefinitely, and basal metabolism tests taken at regular intervals to control the dosage. The results obtained with the proper administration of thyroxin are striking and gratifying. The mentality, as well as the physical appearance, improves. It is true, however, that mental improvement *does not always* accompany the physical improvement. If carelessness or indifference on the part of the parents exists and the medication is not continued, a slump back to the original condition occurs. The earlier in life the thyroid deficiency is determined and treatment instituted, the greater the likelihood of the child developing to his fullest potentialities.

The parathyroids.—Embedded in each lateral lobe of the thyroid on each side of the windpipe are two small organs about the size of a grain of wheat. These four organs, called the *parathyroids,* secrete a hormone, *parathormone,* which controls the calcium metabolism of the body. Calcium is the "insulating material of the nervous system." The parathyroids influence the physical responses of emotions by controlling the calcium metabolism which is an essential process in autonomic nervous division functioning. The autonomic nervous division in turn influences the functions of the cerebrospinal division by influencing the caliber of its blood vessels.

The destruction of the parathyroids is characterized by sudden involuntary contraction of muscles and extremities

(tremors and spasms), loss in muscle tone, loss of weight indicating a disturbed metabolism, and disturbances in the heart action, temperature control, and respiratory tract. Parathyroid insufficiency is characterized by an increased physical response to emotion, habit spasms, emotional upsets and outbursts, and sudden but uncontrollable impulses. The individual tenses too quickly and responds too violently. There is often a lack of contraction, restlessness, twitching and jerking. Physical manifestations such as rickets interfere with proper exercise, which might be an outlet for some of their restlessness. Fortunately, extreme cases of calcium deficiency are not seen often today. It has been found that calcium balance depends on proper diet, vitamin C as well as parathormone, all of which, if properly and adequately administered, correct the condition.

The adrenal or suprarenal glands.—Perched at the upper tip of each kidney but independent of it is a small triangular or cocked-hat-shaped organ known as the *adrenal* or *suprarenal* glands. Each of the two adrenals is composed of two parts—an outer shell or *cortex,* and an inner portion known

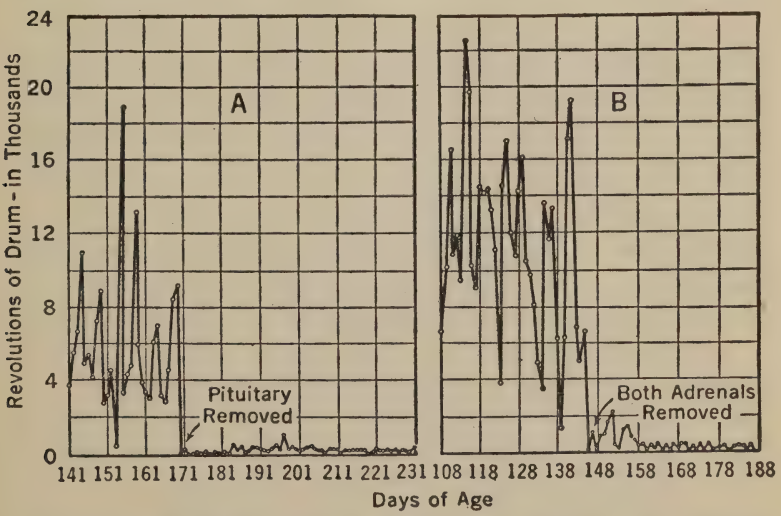

FIG. 31.—ENDOCRINE GLANDS IN RELATION TO ACTIVITY. *A,* the effect produced on a rat's running activity by loss of the pituitary gland. *B,* the effect produced by loss of the adrenal glands. From C. P. Richter, *American Journal of Orthopsychiatry,* II (1932), p. 347.

as the *medulla.* The medulla secretes *adrenin,* whose function seems to be to energize the body when demands for sudden action occur. The medulla of the adrenal glands is closely related functionally to the sympathetic branch of the autonomic nervous system. In emotional states adrenin is secreted in the blood in large quantities so that it can reinforce the activity of the sympathetic system. Adrenin accelerates and strengthens the heart beat, results in the conversion of glycogen to glucose in the liver, constricts blood vessels, inhibits the musculature of intestine, and stomach,

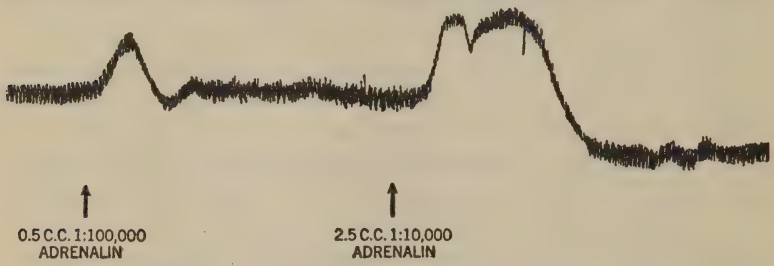

FIG. 32.—SHOWING THE EFFECTS OF ADRENALIN ON BLOOD PRESSURE. From Frederick H. Lund, *Emotions* (New York, The Ronald Press, 1939), p. 58.

dilates pupils of the eyes, relaxes muscle wall of bronchi, and reduces the effects of fatigue in the skeletal muscles. The secretion of adrenin is stimulated by emotional states (fear, anger, rage, etc.), exposure to cold, anæsthesia, and the fall of arterial blood pressure.

The cortex of the adrenal glands secretes *cortin,* which is vital for life. An adequate supply of cortin is necessary for good health. This supply may become insufficient during or following an acute infection, especially in individuals who are constitutionally asthenic. Not infrequently medical men will use cortin in the treatment of such conditions.

The adrenal glands secrete at least eight hormones and some of these are probably as important as cortin and adrenin. Among these are a lactogenic hormone, a male sex-stimulating hormone which is female depressing, a male sex hormone with no female effect, a female hormone which is male depressing, a sleep-producing hormone, and a general tissue-stimulating hormone that is concerned with bone

growth. Researches upon adrenal glands reveal that some of these hormones duplicate the functions of the pituitary.

Undersecretion of the cortical hormone results in Addison's disease, which is characterized by anæmia, languor,

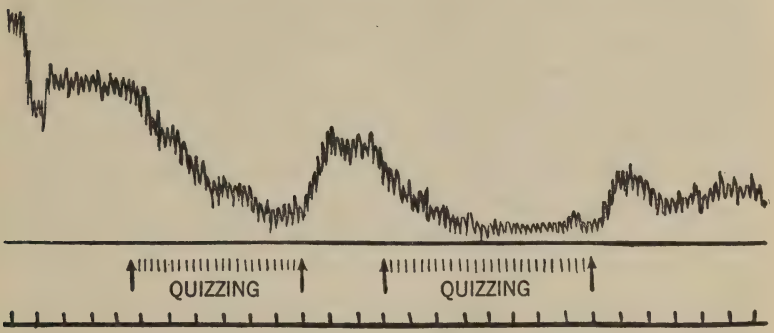

FIG. 33.—SHOWING VARIATIONS IN BLOOD VOLUME IN THE HAND AND FOREARM DURING PERIODS OF EMOTIONAL STIMULATION. From Frederick H. Lund, *Emotions* (New York, The Ronald Press, 1939), p. 102.

weakness, low blood pressure, discoloration or bronzing of the skin, loss of appetite, excessive nervousness, digestive disturbances, and early death.

The gonads.—The male sex hormone is produced by the interstitial cells of the testes and the female sex hormones by the ovaries. The gonads control the secondary sexual characteristics in the male; and the menstrual cycle and changes in the female body during pregnancy. The gonads also play a rôle in emotions by maintaining the sex pattern of the individual. "When the gonads of the male are not sufficiently developed the capacity for emotional response is increased and may approach the feminine. Conversely, when the female gonad pattern is insufficiently developed the normal feminine emotional mechanism functions poorly." [8]

If stimulated by the gonadotropic factor of the pituitary, the gonads may develop prematurely, resulting in a condition known as *pubertas præcox*. Abnormalities in behavior are to be expected as a result of such early maturity. Sex instincts for which the child is unprepared and uninhibited, may lead to serious problems because these children, being more mature than the other members of their group, tend to

[8] Blumgarten, *op. cit.*, p. 17.

feel like heroes, but eventually realize that they are different, and withdraw, feeling inferior. They are among the group which run away from home at an early age, are influenced by undesirable companions, or become antisocial members of society. Unhappiness frequently results because of this physical deviation from the normal, such as masculine looking girls or feminine appearing boys. Emotional instability is manifested in hypogonadal cases in both males and females.

The pancreas.—The pancreas is both a duct and a ductless gland lying behind and overlapping the stomach. The islets of Langerhans produce the hormone, *insulin,* which regulates liver activity and controls the utilization and storage of sugar by the body tissues (sugar metabolism). Disturbances in this function manifest themselves by a depressed condition or coma, or by convulsions in the case of a depletion of blood sugar. Hypofunctioning of this gland is called *diabetes mellitus.*

The symptoms of diabetes are extreme hunger, thirst, nervousness, and loss of weight.

The hyperfunctioning of the islets of Langerhans is usually indicative of a tumor. The signs and symptoms are acute weakness, trembling, perspiration, mental confusion, and collapse unless relieved by food.

The thymus.—The thymus, consisting of two lateral lobes sometimes united into one mass, is located in the neck below the thyroid and upper part of the chest cavity along the windpipe. It is relatively large in the young child but shrivels or atrophies after puberty.

Little is known of its exact function but its activity seems to be related to that of the gonads. It also appears to hold in check the development of the reproductive organs in the young child.

The pineal body or epiphysis.—The pineal body or epiphysis is a small cone-shaped structure about the size of a pea, lying in the transverse cerebral fissure or base of the brain behind and above the pituitary. Its function is unknown although it is thought to inhibit sexual development in the young. In adults, the gland is a negligible factor.

Relationships and interrelationships.—Some ductless glands stimulate the activity of other glands, whereas others

inhibit such activity. The pancreas, thyroid, and adrenals influence the activity of one another besides influencing sugar metabolism in the liver. The thyroid and adrenals stimulate one another to activity. The thyroid and the pancreas, and the adrenals and the pancreas inhibit the activity of one another. If the thyroid is removed the pituitary gland becomes enlarged and vice versa. The pituitary and the gonads are intimately related, and the pituitary and the thyroid seem to stimulate the sexual glands. Insulin decreases the amount of sugar in the blood stream and adrenin stimulates its passage into circulation. The pancreas and the adrenals influence carbohydrate metabolism and the thyroid is the chief metabolic regulator of the body.

The autonomic nervous system has a reciprocal relationship with the ductless glands. Stimulation or depression of the autonomic division may stimulate or depress the secretions of the ductless glands and vice versa. For example, an emotional situation may elicit the secretion of adrenin from the medulla of the adrenal gland, and conversely, an increased secretion of this gland brings about an emotional response.

While information is incomplete on the relation of the endocrine glands to the autonomic nervous division, we do know that the chemicals produced by them do function as stimulants or depressants of the sympathetic or the cranial-sacral branches. The secretion of the adrenal medulla brings about responses indicating stimulation of the sympathetic branch. The thyroid hormone is also sympathicotropic. The posterior pituitary, gonads, and thymus are all parasympathicotropic since they bring about responses which indicate stimulation of the cranial-sacral branches. Complex emotions may result from a pluriglandular mechanism due to the secretion of hormones affecting various branches of the autonomic system at a particular time.

Although due to many causes, emotional instability may involve endocrine factors and if so the nature of the imbalance may be ascertained by a history and physical examination. If the endocrines are involved a definite endocrinopathy is manifested. There is also manifested a definite psychological and constitutional pattern.

Some of the hormones and vitamins appear to work together and as substitutes for each other. Both hormones and vitamins are essential to life, and there exists between them a whole series of interrelationships. Some of the researches into vitamin D reveal that a chemical substance can be both hormone and vitamin. Its function is principally the regulation of calcium metabolism, which governs the growth of the teeth and the bones. Man produces his own vitamin D through the action of sunshine on the skin. When this vitamin is produced in the body by sunshine, the process involved makes it both a gland secretion and a vitamin. The hormones and vitamins have both synergistic and antagonistic actions. Vitamin A nullifies the effect of thyroxine in certain situations at least. The reverse action has also been noted where an excess of thyroxine will prevent the body from making vitamin A. Experiments on goats show that vitamin A in the goat's milk disappears when thyroxine is administered to the animal. One of the hormones from the anterior pituitary activates the thyroid gland. Vitamin A has been observed to act in a contrary manner by neutralizing the thyrotropic hormone of the pituitary gland. Like insulin, vitamin B has been found to have an effect on carbohydrate metabolism. It seems to act in an antagonistic way to insulin in persons who are sensitive to insulin but to act like insulin in other individuals. Vitamin D seems to serve as a substitute for the parathyroid hormone which has direct effect on calcium metabolism. Vitamin E, the fertility vitamin, may replace the hormones of the gonads according to unverified claims. The therapeutic application of vitamin E, however, is still in the experimental stage. Limited clinical evidence indicates that it may be of some value in certain cases of functional sterility.

From these data it is evident that the relationships and interrelationships of the nervous system, endocrine system, and vitamins are intimate.

QUESTIONS AND EXERCISES

1. Examine a chart or drawing showing a sketch of the entire nervous system. Differentiate the cerebrospinal division from the autonomic division. Especially note the shape

and location of the several brain parts, and the subdivisions of the autonomic system.

2. Ask your head nurse or floor supervisor to show you a patient suffering from some injury or disease of the brain or cord. Also ask to be shown some cases having disturbances of internal secretions. What were the patient's symptoms? What signs did you observe?
3. Describe the structure of a nerve cell. Just what influences and factors are needed for the normal development of the cells in the cortex of the cerebrum? How would the normal development of brain cells in the unborn child be affected by a thyroid deficiency in the mother? Would a toxic condition in the mother affect the unborn child's development?
4. Ask the floor supervisor or head nurse to show you any cases of infantile myxœdema, brain injuries due to the birth process, and brain injuries due to the use of radium or X-rays on the mother during her pregnancy. What behavior characteristics were observed in each case?
5. Study carefully a chart or atlas showing the structure of the spinal cord. How is this structure affected by such diseases as infantile paralysis? syphilis of the cord? What is locomotor ataxia?
6. What are the several functions of the cerebrum? the cerebellum? the medulla? the thalamus? the spinal cord? How are these functions affected by experience? illness? injuries?
7. What are the functions of the cranial and the sacral branches of the autonomic division? How do these functions differ from those of the sympathetic branch?
8. Prepare a chart showing (1) the names of the endocrine glands, (2) the secretions of each, and (3) the functions of each secretion. Compare your chart with those of your classmates. Check it with some good text in the field of physiology or endocrinology.
9. The nervous system and the endocrine glands are involved directly or indirectly in all cases of emotional upsets, irritability, and behavior disorders. Explain fully.
10. What is the relation of the several vitamins to behavior? What is meant by the statement that an intimate relationship exists between the vitamins and the hormones? What is the proof? Is there any evidence to support the viewpoint that human control and integration is wrought by the neuroendocrinal system rather than by either the nervous system or the endocrines alone? Explain.

11. What disorder is the probable cause of the following: stature of seven feet, excessive adiposity, protruding eyeballs, bronzing of skin, chalky teeth, absence of pupillary reflex, arrested mental development in child, diabetes, precocity in sexual development, inability of young mother to produce milk after bearing child. What dangers attend making any "diagnosis" or guess such as you have just done?
12. Prepare a vitamin chart which will show in particular how vitamins are related to the senses, the nervous system, and the hormones.
13. Compare the behavior of some patients with that of the same number of individuals who are in good health. If possible, try to get a variety of patients—perhaps one suffering from some infectious disease, one from some drug or toxic substance, one from some injury, and so on.
14. Cite instances of personality disorders or maladjustments being indirectly caused by such things as birthmarks, protruding eyes, enlarged facial features, or excessive weight. How might these maladjustments have been prevented?
15. Inspect this chapter carefully for the purpose of finding out just what it has to contribute to understanding your own behavior and that of patients. Compare your answers with those of others in your class.
16. Just what is meant by the muscles, endocrine glands, sense organs, and nervous system being behavior mechanisms?
17. Suppose you witness a bad automobile accident in which the occupants are badly injured, or you become greatly angered over the requirements of your instructor or supervising nurse. Tell as specifically as you can about what happens in the sense organs, nervous system—cerebrospinal and autonomic—endocrine glands, and muscles.

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CHAPTER V

MOTIVATION

From time immemorial people have been interested in trying to figure out what are the "springs of action." The ancient philosophers expounded many theories to account for the diverse ways in which people act in various situations and to explain the goals for which they strive. Playwrights and novelists are particularly interested in the problems of human motivation, and with great literary skill they endeavor to give us an insight into the motives of their characters. Salesmen and advertisers have a practical concern about the motives of human beings, and they seek to develop suitable techniques for arousing motives which will induce people to purchase their goods.[1] The candidate for political office tries to motivate the voters to elect him. Everywhere we observe our fellowmen trying to reach various goals. When we try to enumerate the things we want, the list grows to great length. No wonder, then, that students of psychology find that motivation is one of the most important and interesting topics to investigate.

Some Misconceptions about Motives

Motives—not "forces."—A common mistake to make in considering this topic is to think of the human being as a sort of inert mass pulled hither and yon by mysterious "forces" called motives.[2] Of course, a list of motives does

[1] For a readable account of some basic principles of the psychology of advertising, see Daniel Starch, *Principles of Advertising* (Shaw and Sons, 1923).

[2] Wm. McDougall (*The Energies of Men,* Scribner, 1933) is one of the few recent psychologists who have maintained the vitalistic position. Vitalism is the theory which assumes the existence of supernormal forces which regulate growth and behavior. Few modern psychologists, with the exception of those who accept the Freudian point of view, have any faith in this theory. For a good example of "inspirational," vitalistic psychology at its best, see J. W. Buckham, *Personality and Psychology* (Doran, 1924). See also H. C. Link, *The Rediscovery of Man* (Macmillan, 1938).

have some use in helping us to interpret behavior; but such a list should be considered merely as a convenient, descriptive method for understanding human beings. To say, therefore, that there is a strong motive to achieve superiority may be helpful in understanding why some people spend their lives in working for a position of eminence in their communities. On the other hand, no one has ever seen a "motive to achieve superiority." We *infer* the existence of such a motive from observing the ways in which some people act. In other words, we postulate the existence of motives. They are hypotheses which are justified by the fact that if we accept them we can understand behavior more adequately.

Students who are trained in sciences such as chemistry or physics may have some difficulty in reconciling their knowledge of objective sciences with this point of view.[3] They are accustomed to base generalizations upon observable evidence. They are perplexed to find that the psychologist appears to reverse the procedure and to use the generalizations as explanations of observable evidence. In other words, a dynamic account of motivation seems to make use of hypotheses in order to explain what we observe; whereas a science like physics proceeds from the observable data to the hypotheses. As a matter of fact, other sciences make just as much use of hypotheses as psychology does. If we think of motives as being useful and necessary hypotheses in understanding behavior, there should be no serious confusion. Particularly should that be the case if we think of motives as being convenient, descriptive labels. By no means should we regard them as "forces" acting upon the individual from without and driving him towards definite goals.

Motivation—not a topic that can be simplified.—In some textbooks there are neat lists of the basic human motives that give an oversimplified impression to the student. Single-track explanations of motivation are found only in these textbooks; never in real life. Adler, for instance, postulated the existence of one major impulse—the desire for superi-

[3] For a clear, interesting account of the dynamic nature of physiology, see V. H. Mottram, *Physiology* (New York: Norton, 1928), chap. i. This author states that students trained in the static concepts of anatomy and physics have some initial difficulty in undertaking a dynamic, functional study, like physiology or psychology, which deals with living organisms.

ority—and then interpreted all the complexities of human behavior as manifestations of this single drive.[4] Thomas has given a list of four basic wishes: (*a*) new experience, (*b*) security, (*c*) response, and (*d*) recognition. To the making of such lists there is no end, and from the times of the ancient philosophers to the present many able persons have drawn up simplified accounts of the basic drives.

When we try to analyze the motives which led us to any given act, we usually find that it is exceedingly difficult to determine the real reasons. For instance, we do not have a single motive to be gregarious. As a matter of fact, there are many people whom we strive to avoid, and on some occasions we may not like to have anyone about us. At other times we seek the companionship of certain people and greatly enjoy being with them. Obviously, therefore, to postulate the existence of a gregarious motive would conceal the real facts in the case. Whether we wish to be gregarious or not depends upon the situation, upon our mood at the time, and upon the people.

Motives—not inherited.—A prevalent misconception about motivation is that we inherit a number of "dependable human propensities" which constitute the "springs of action." Formerly, psychologists were inclined to draw a sharp distinction between the original nature of man and his acquired disposition. Human beings were considered to inherit a number of "instincts" or drives, which were more or less modified by social training but which always furnished the dynamics for behavior. Textbooks, therefore, usually contained a chapter or two on instinct or "unlearned drives."

Since this view has had a great influence upon popular psychology, it should be examined briefly. One student has perused the writings of several hundred writers and found that over fourteen hundred activities have been referred to as instinctive. Furthermore, he discovered that these writers were in marked disagreement with one another. Apparently, therefore, they were interested only in constructing elaborate theories, and not in scientific description. These lists of "instincts" conceal ignorance or confess precommitment to

[4] See, for instance, Alfred Adler, *The Practice and Theory of Individual Psychology* (Harcourt, Brace, 1924).

some given theory. As a matter of fact, many types of behavior which were formerly attributed to heredity are now known to result from learning. No longer do psychologists believe that a clear line may be drawn between heredity and learned behavior.

The Dynamics of Behavior

Adjustive behavior.—Motivation is synonymous with the life process itself. When the physiological equilibrium of the infant is upset, as by a pin sticking into it or by hunger, tensions are created and the infant cries. After it has been made comfortable once more, the tensions disappear. Of course, we might postulate the existence of an inherited motive for self-preservation to account for the behavior of a hungry infant. That, however, is a needlessly complicated hypothesis. There is no "force" from without which makes the baby cry and struggle. On the contrary, a physiological need is at the basis of the behavior. When the need has been supplied, the tensions are reduced and the equilibrium is restored.[5]

For the sake of clarity, these basic tensions are referred to as drives.[6] Any upset in the physiological equilibrium—thirst, pain, hunger, cold—is a drive. Instead of being mysterious "forces" or "instincts" these drives are actually organic conditions of disequilibrium. Any parents who have paced the floor with a malnourished or sick infant have had an opportunity to learn something about the true nature of motivation. There is no reason for devising an elaborate

[5] For an amplification of this view from the standpoint of a physiologist, see W. B. Cannon, *The Wisdom of the Body* (Norton, 1929).

[6] A *drive* is a persisting lack in physiological balance. Thus, thirst and hunger, which represent conditions of chemical imbalance in the body, are drives. A *goal* is a situation which restores the balance. Food and water are goals which remove the hunger and thirst drives. A *motive* is a socially conditioned drive. Thus, the young child does not remain content to have merely those foods which satisfy biological hunger drives; he wants candy, ice cream, pie, and so on. The child learns to have a great many motives which are entirely unrelated to the physiological drives, although motives are acquired as the result of learned modifications of drives. The motive to get attention, for instance, is a highly complex modification of various basic drives of the infant. Both drives and motives are persisting conditions of imbalance. When the balance is restored, the drive or the motive is eliminated.

list of fundamental wishes or instincts if the sleepless parents know that their urge for sleep is a physiological condition and if the physician determines the organic cause for the infant's distress. When the parents are once again able to get a refreshing sleep and when the infant is restored to health, that pleasant ending is not the "satisfaction of the wish for security." It is the elimination of certain physiological tensions which upset the members of that household.

A barefooted man who steps on a tack in the dark may jump into the air and shout. There is no need to postulate the existence of an "instinct of self-preservation" or to speak of an aroused "libido" to account for his exclamations. The explanation is obvious—his equilibrium has been upset. The writer knows of a boy who pulled out several teeth with a pair of pliers in order to get rid of a toothache. After several days of intense pain this farm boy was in a severe condition of disequilibrium and was desperate enough to take drastic action to eliminate the anguish. The aching tooth was a stimulus to definite activity.

A *drive,* therefore, is any organic condition of disequilibrium which sets up a train of behavior. At the beginning of life the human infant has relatively few drives. If it is properly cared for, the infant sleeps most of the time, and steadily gains in weight and height. This type of growth is called *maturation.*[7] Heredity and environment combine to effect the normal development of the infant. There is no logical reason to posit an "instinct of maturation" or to attempt to differentiate between the contributions of heredity and environment. In response to organic factors, dependent upon both heredity and environment, the normal infant matures. Organic factors also cause the infant to squirm, kick, and wave its arms ceaselessly during its waking hours. This activity seems to facilitate the growth processes and to insure healthy development. In short, the various manifestations of "drive" are nothing but the life process itself.

Behavior that results in normal, healthy growth may be called *adjustive activity.* Since the infant lives almost wholly on the level of physiological activity, adjustive behavior in infancy is directed by these organic drives. The adjustments

[7] Maturation denotes the growing up process.

which the infant seeks are those which maintain or restore the optimum physiological balance. The drives are aroused when the equilibrium is upset, and the drives disappear

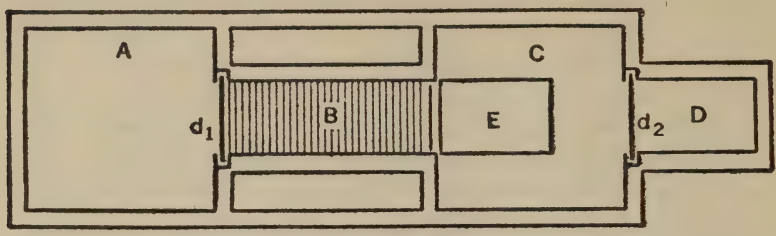

FIG. 34.—A TYPICAL OBSTRUCTION BOX FOR THE MEASUREMENT OF THE STRENGTH OF ANIMAL DRIVES. The rat is placed in compartment *A* and the reward is put in compartment *D*. Some desired reward, such as food, water, a rat of the opposite sex, or offspring, is used to furnish the incentive. An electric grid, *B*, is interposed between the animal and the goal. The strength of the drive is indicated by the amount of shock which the rat will endure to reach the goal. The first door, d_1, is opened by the experimenter; and when the rat reaches the platform *E*, the door to the reward compartment, d_2, is opened. From T. N. Jenkins, L. H. Warner, and C. J. Warden, "Standard Apparatus for the Study of Animal Motivation," *Journal of Comparative Psychology*, VI (1926), 366.

when the balance has been restored. Thus, if the bedclothing is disarrayed so that the infant cannot move, the youngster cries and tries to struggle. There is a physiological need for muscular activity. An epigastric disturbance causes pain, and the infant cries until the stomach ache disappears. In other words, *adjustive behavior* is that which brings or maintains the optimum equilibrium.

"Unconscious motivation."—Since a great deal has been written about the "unconscious mind" and the "unconscious motives," it is well to examine these theories. The infant has no introspective awareness of an organic condition which produces thirst. There are definite tissue lacks which upset the equilibrium of the baby and make it cry. The crying is the result of bodily discomforts which the infant, of course, is unable to verbalize. In a crude sense, therefore, it has an "unconscious" drive for water. If the infant is awakened in the night with all its bedclothing kicked off, it may cry until someone comes and makes it warm again. Obviously, the infant does not reason that by crying it will bring mother

into the room. On the contrary, the crying is the immediate reaction to its being cold and uncomfortable. "Unconscious motivation" is, therefore, nothing more than behavior which is not introspectively analyzed and expressed in words. The "unconscious mind" is simply that behavior which is unverbalized.[8]

The normal infant soon learns that by displaying various signs of distress it can secure the attentions of various adults. Consequently, the signs of distress may be exhibited in order to attract attention, to be picked up, or to be petted. This sort of behavior, which is purposeful in nature, is also actuated by vague and unverbalized tensions on the part of the infant. In that sense it may be called "unconsciously determined behavior." It should be noted, however, that to speak of behavior which is initiated by unverbalized disequilibrium is by no means the same thing as referring to an "unconscious mind" or to the "unconscious springs of action." That certain types of behavior are not introspectively analyzed is a simple everyday fact; but that there exists an "unconscious mind" is a far-fetched theory.

The goals of behavior.—The pious Buddhist hopes that by faithful adherence to his beliefs he may eventually attain Nirvana. This is a condition in which one is supposed to be relieved of the suffering, frustrations, despair, and temptations of the world. No longer does one who has reached Nirvana have to undergo the successive tribulations of birth, death, and reincarnation, possibly into the body of a lower animal. In some measure, Nirvana represents the condition of optimum complacency, in which there are no desires whatsoever, and hence no disappointments.

Except in a philosophical or religious sense, however, the attainment of perfect complacency is impossible. Human beings are in a condition of never-ending change. No sooner is one drive satisfied than another drive arises. Only a relative condition of equilibrium can be attained. Associated with the basic physiological drives there arise innumerable other needs and wants. The normal infant begins to want brightly colored objects, for example, or fragile ornaments

[8] For a readable account of various points of view regarding the "unconscious," see *The Unconscious: A Symposium* (Knopf, 1929).

on the mantel. Apparently there is a keen, perverse joy in hurling a bottle or a dish to the floor. Certainly there is a desire to play. In a relatively short time the hunger drive becomes associated with many complicated desires. The youngster is no longer satisfied with foods which merely supply the physiological hunger needs; particular foods are demanded or rejected. For the satisfaction of the thirst drive the child may prefer carbonated beverages to a glass of ordinary water. In short, through the learning process the basic wants become greatly complicated.

As these basic physiological drives become profoundly altered while the child grows up, the purposive nature of behavior likewise becomes complicated and involved. No longer is the individual content with maintaining or regaining the condition of optimum physiological balance. New wants and needs are acquired. If human beings were incapable of learning, then the explanation of motives would be an easy, simple matter. There would be no temptation to invent a set of "forces," or instincts, or even an unconscious mind. Life would be reduced to a series of physiological drives, and hence the condition of equilibrium would be relatively easy to attain. Except for very young infants and for idiots, however, the problem of motives is much more complex. As a result of the learning process, the behavior of the child becomes attached to certain definite goals. Instead of a mere physiological equilibrium, the child demands the satisfaction of a complex series of wants which vastly increase in number as the child grows older.

The goals now are the satisfactions of each of these wants. Since the wants multiply in number, the possibility of gratification recedes into the more and more distant future. Any parent is familiar with the vast number of wants which are mentioned by the child or adolescent. The young girl wants attractive clothing, increased allowance, social prestige, and the use of the family car—to mention a few homely examples. Most parents want their children to achieve high success in high school or college, and thus, perhaps, to bring vicarious successes for themselves. The adolescent boy can scarcely wait until he has grown up and can occupy a position which will give him ample money for his needs. Possibly he may

express a desire to stop his schooling and to take a job immediately if one is open. As the wants increase in number, the individual becomes more and more restless and discontented with the present state. The likelihood of attaining a state of complacency becomes more and more remote. This feeling Pope has expressed in a well-known couplet:

> Hope springs eternal in the human breast;
> Man never *is,* but always *to be* blest.

Frustration and Aggression

A *frustration* is any feeling of failure or defeat due to some obstacle that blocks the satisfaction of a drive or motive. In other words, it is the result of any condition which tends to maintain the state of disequilibrium. The obstacle may be real or imaginary, objective or symbolic. Thus, the prisoner is kept in confinement by the bars and the walls of his place of captivity. The diver who becomes entangled beneath the surface of the ocean is frustrated in a very real and tragic sense of the word. On the human level, however, symbolic and imaginary frustrations are even more important than real and objective ones. For example, think of a small boy who is thrown into a frenzy of rage by another urchin who protrudes his tongue or makes a derisive remark. What sort of frustration is here? Clearly, the first boy is frustrated in a symbolic manner. He is deprived of a specific goal which he has learned to esteem—namely, the achievement of favorable attention from other people.

Adults have no difficulty in thinking of many symbolic or imaginary situations which produce great frustrations. In a competitive social order, each one of us is constantly struggling for many specific goals. We want to be well-thought-of by our associates, to gain a position of authority, to find some hobby which will make us forget our frustrations, or to move into a new community and begin afresh. People want "to keep up with the Joneses," to enjoy a secure old age, to "keep that schoolgirl complexion," or to maintain their good health. Obviously, in a social order in which other people are struggling for similar goals, there are inevitable frustrations for each of us. We have to learn how to adjust to

unsatisfied wants and how to defer the achievement of satisfactions to some future time. This lesson many people learn in an imperfect way; hence they are said to be frustrated or neurotic.

Some experiments on the effects of frustration.—One group of psychologists devised an ingenious experiment for observing the effects of frustration on thirty children from two to five years of age. First, the children were observed as they played with various satisfying toys. Next, the group was presented with a set of toys which were much more attractive and enjoyable. After the group had become interested in this second set of playthings, the toys were taken away and placed behind a wire screen. Some of the youngsters displayed no interest in trying to regain possession of these toys, but other children became greatly upset. Those who merely gave up when the playthings were kept in sight —but made unobtainable—were said to "regress" or to find substitute outlets. Those who became profoundly disturbed by their inability to get the attractive toys were said to be frustrated.[9]

Some recent clinical studies of Negro youth support the conclusion that many young Negroes experience a great feeling of frustration, but that a considerable number of them are able to find substitute gratifications whereby they escape from the disquieting effects of long-continued denial of motives.[10] An important laboratory experiment bears directly upon these findings.[11] A rat was taught to jump from a platform facing two openings closed by cards. If the rat jumped towards the card with a black circle on a white background, the card fell back and the rat got some food. If, however, the rat jumped towards the white circle on the black background, it was punished by hitting its nose against this fastened card. Then the situation was complicated and confused in such a way that the rat's habit of jumping towards one

[9] R. Barker, T. Dembo, and K. Lewin, "Experiments on Frustration and Regression in Children," *Psychological Bulletin,* XXXIV (1937), 754-755.

[10] See the following interesting contributions: Allison Davis and John Dollard, *Children of Bondage,* 1940; E. F. Frazier, *Negro Youth at the Cross Ways,* 1940; C. S. Johnson, *Growing Up in the Black Belt,* American Council on Education, 1941.

[11] N. R. F. Maier, *Studies of Abnormal Behavior in the Rat* (Harper, 1939).

card was no longer adjustive. In other words, the rat had been taught a certain course of action, but now that habit was of no avail in reaching the goal. As a result, this rat became completely disorganized by the frustration. It suffered from what is termed an "experimental neurosis." It had developed a neurosis as a result of the frustrations.

In presenting the life histories of young Negroes, the investigators made considerable use of some of these laboratory studies on the effects of frustrations in animals. Suppose, for example, that a young person is brought up in this country and taught to expect that he can share fully in the American way of life. If he studies hard and prepares himself to occupy a desirable position in the community, he is told that he will find the reward which he deserves. After he has reached a certain stage in his development, however, he learns that there are insuperable barriers in the way. He finds that he belongs to a definite caste and that even within his caste there are sharp lines of cleavage into social classes. Thus, he becomes frustrated, somewhat like the rat in the laboratory experiment. Nothing he can do will enable him to achieve his childhood and adolescent dreams. If he cannot escape from this sense of frustration, he may become neurotic. He may, however, learn how to become accommodated to his status by setting lower goals for himself.

It is a common mistake to assume that everyone reacts to frustrations by becoming disorganized and upset. One investigator locked some toys in a suitcase while some children watched him.[12] Then he presented the suitcase to the children. Some children worked quietly during the whole period in a vain attempt to get the case open; others asked him how to get it unlocked. Still other children gave up the task or refused to attempt it. Perhaps all the children experienced a sense of frustration, but many of them displayed no overt signs of being upset or frustrated. This experiment clearly shows that there are great differences in the responses of children to frustrating situations.

Several years ago the head of an institution for juvenile delinquents in Vienna had an opportunity to undertake a

[12] L. R. Marston, *The Emotions of Young Children* (University of Iowa, Studies in Child Welfare, 1925), III, No. 3.

significant experiment with twelve boys.[13] These lads were the worst boys in the institution. They were argumentative, pugnacious, disobedient, and aggressive. Even the other inmates were antagonized by their bellicose demeanor. The head of the institution concluded that these twelve boys had been frustrated and rejected all their lives; hence they had become aggressive. Severity had completely failed with them because they had never been dealt with in a kindly, patient, loving way by any adults with whom they had come into contact. Two women members of his staff agreed to participate with him in trying a new method of treatment for these boys. No matter what they did, the boys were not punished or reproached. At first, they reacted to their new freedom by violent outbursts of destructive behavior. They fought with one another, they smashed furniture and windows, and they made every attempt to anger those who had charge of them. Eventually, each boy tended to have a fit of uncontrollable weeping. After this had occurred, the boy became more manageable and coöperative. He gradually became strongly attached to the motherly women who had charge of the cottage and to the head of the institution. At length, these twelve boys were transferred back to the regular life of the institution, where they showed some indications of having a greater sense of responsibility to the institutional staff and where they fitted into the regular pattern of the reform school in a satisfactory manner. Understanding and kindness are superior to punishment in the control of conduct.

A certain measure of aggression is, of course, desirable. When an individual encounters an obstacle which blocks the satisfaction of a motive, he may be aroused to make an intelligent, purposeful attack upon the situation if he has some feeling of aggression. A sense of frustration may, therefore, underlie such desirable attitudes as determination, self-reliance, and persistence. An aggressive attack upon the minor frustrations of daily life may be an indication of good adjustment, physical and mental health, and ambition. A person who avoids every difficulty or who admits defeat too readily is certain to have a hard time in our competitive social order. In many cases, however, aggression represents a futile way

[13] August Aichhorn, *Wayward Youth* (Viking, 1935).

of overcoming various obstacles. It may find expression in jealousy, destructiveness, or bitterness.

Levels of Aspiration [14]

Within the past decade psychologists have made increasing use of the concept of levels of aspiration. Although the term has not been clearly defined, it does have a great conversational utility in descriptions of the various problems of human motivation. A level of aspiration is the goal which a person is content to reach in satisfying a motive. For instance, let us assume that every normal, healthy young man wants to become economically self-supporting and independent. His level of aspiration would be revealed by the goal which he sets for himself. If he has a high ambition, he may complete college and professional school, even though he has to work his own way through. A college student who has a low aspiration-level may investigate the course offerings in order to find the easiest subjects. One more example may help to make this term clearer. Imagine that a high-school pupil has a difficult assignment in algebra. Some pupils might not even attempt to work the problems; others might try a few of the easiest ones, and then copy the rest of the problems from schoolmates; a few might ask for a little assistance, but do the problems themselves; and a few might determine to find out the exact procedures involved, to work every problem without assistance, and to check or prove their answers.

People learn from past experiences just how high they may set their own level of aspiration in any given task. When

[14] The term "level of aspiration" has a great deal of utility as a descriptive concept. It is an imperfect translation of *Anspruchsniveau,* and it was defined by its first user as follows: "The subject . . . always undertakes the task with certain demands, which can change in the course of the activity. The totality of these constantly shifting, now indefinite, now precise, expectations, goal-settings or demands in connection with one's own future performance, we shall term the level of aspiration of the subject." Quoted from F. Hoppe, "Erflog und Misserflog" (Untersuchungen zur Handlungs- und Affekt-psychologie. Kurt Lewin, ed.) *Psychol. Forsch.,* XIV 1930), 10. Probably this useful term will be increasingly used, and undoubtedly there will be a considerable amount of experimental work based upon its implications. See, for example, J. D. Frank, "Recent Studies of the Level of Aspiration," *Psychological Bulletin,* XXXVIII (1941), No. 4, 218-226.

the levels are established on a low plane, the individual is able to escape many frustrating experiences. Thus, some people seem to prefer occupying a routine position that makes little demand upon their abilities. By attending the movies or by reading of high achievements, they are able to satisfy in an indirect way their longings for a better status. Other individuals prefer not to declare publicly what goals they have set for themselves; hence they seek to avoid having to admit defeat or frustration. Still other people establish high levels of aspiration, and they work for years in trying to reach these goals.

In the case of the normal individual there is always a discrepancy between the level of achievement and the aspiration-level. Consequently, the normal person is strongly motivated to improve upon past triumphs. A common symptom of intellectual deterioration is exhibited by the individual who acts as though his present achievements were wholly and completely satisfying for him. Biographies of great men and women, on the other hand, show that they were constantly striving to reach higher levels of achievement, even up to the last years of their lives. Their example should serve as a beacon to the rest of us.

Two important factors set the aspiration-levels of any individual. First, the culture patterns of the community are important determinants. In some areas there is a great deal of emphasis upon education, and young people are strongly encouraged to continue in school as long as possible. Varied employment opportunities furnish tangible goals which sustain their ambitions. In other communities the school systems are unstimulating and the work opportunities are few. Therefore, the people in these communities seem to have rather low aspiration-levels. Secondly, an individual's past experiences are an important determinant in setting his levels of aspiration. If he has not experienced desirable successes during his attendance at school and if he has failed to adjust himself satisfactorily to his employment, he may set low levels for subsequent achievement. Modern education emphasizes the need for giving to every child an opportunity to experience success. The reason is that success experiences encourage the child to set higher goals for himself in subse-

quent undertakings. Failure, on the other hand, tends to establish a feeling of defeatism.

Some Dependable Social Motives

We have already observed that human motives are complicated and obscure. No two individuals ever strive for the same goals in the same way. For convenience, however, it is desirable to use certain broad labels which will direct our attention to the dynamic character of social behavior. These labels refer to a number of dependable social motives, although no two persons would display any of these motives in exactly the same way.

The urge for superiority.—If we hold the arms or the legs of a young infant in a gentle but firm manner, the youngster shortly commences to cry and struggle. The restraint of bodily movement presents a frustrating situation. Later on, the child learns that many other types of situations present frustrations. Denial of wishes may provoke the child to have a tantrum. This struggling behavior is the primitive manifestation of the urge for superiority, sometimes called the mastery motive. People do not like to be blocked in the achievement of the goals which they have set for themselves. They summon up all their energies and try to surmount the obstacle. Human beings learn at an early age that a great many of their frustrations are set by other people; hence they acquire the desire to gain a position of superiority in which they can triumph with greater ease.

The young child seems to find a great deal of pleasure in asserting himself. Since he is relatively weak and helpless, it ought to be easy for adults to force him to obey their dictates. The youngster, however, tends to resist their orders and to exhibit a determination of his own. Even the young child may learn how to tyrannize over his parents by having a temper tantrum whenever he does not get his way. Thus he learns that there is a great satisfaction in dominating people. The older person is willing to spend many years of preparation in order to qualify for a position of leadership in which he may dominate a group.

In our culture a great deal of value is attached to the

achievement of personal success and aggressive behavior. When children fail to reach the goals which their parents have set for them, they may be bitterly reproached and prodded. In many public schools the emphasis is upon competitive triumph rather than upon coöperative endeavor. One investigator found that school children do their best work when they are given on opportunity to excel their classmates. Experiments have shown that this desire to excel is so great that people will work for praise, recognition, or symbolic rewards with as much zeal as for tangible goals. Even the young child is taught that the greatest pleasures in our social life are the achievement of superiority and prestige.

The question naturally arises here: Is this dependable social motive inherited or learned? One investigator devised an ingenious experiment to supply the answer.[15] She brought pairs of young children into a nursery school room and placed them opposite each other before a table, on which she had placed some attractive blocks. The youngest children, from age two to four, played happily with the blocks, choosing only those which they required for their play. None of these small children tried to grab all the blocks or to destroy the work of their companion. Older children, however, tended to be competitive and to try to grab all the blocks for themselves. They boasted about their own work and disparaged the work of the other child. In other words, this investigator found that her youngest children were not motivated by a desire to excel, but that many of the older children were strongly competitive.

The conformity motive.—The young child is taught that pleasant rewards are given when his behavior conforms to the standards set by parents, teachers, and other associates. Obviously, the normal youngster is able to find greater satisfactions for his own drives when he is accepted into the social group. Hence there is a premium set upon behavior which gains his acceptance. The basic conformities of the social

[15] P. J. Greenberg's experiment. This investigation, together with many other studies dealing with the individual in a group situation, is reviewed in Gardner Murphy and L. B. Murphy, *Experimental Social Psychology* (Harper, 1931), chap. viii.

group are known as folkways.[16] These are considered to be the "proper" ways of acting, speaking, and dressing. Those who do not conform to the folkways are laughed at or persecuted. They may be excluded from the group, and hence deprived of many satisfactions. More elaborate conformities are called the mores of society. These are the standards of conduct which are considered necessary to maintain the welfare of its members. The fundamental religious beliefs of a group are examples of mores. In rural Pennsylvania, for instance, the Amish people strive to maintain a definite type of life which differs radically from that of their neighbors. Devout members of this sect will not ride in automobiles, bear arms, "go to law," or lend money at interest. They are greatly worried lest their children become "worldly" and depart from their traditional ways of life.[17]

Institutions, such as hospitals or schools, have a system of rewards for those who conform to the rules and regulations which are necessary for their efficiency. Various professional groups have codes of ethics, and their members who violate the codes may be punished by expulsion. Within an institutional group the individual may have a considerable amount of freedom, but he is required to adapt himself to a definite set of regulations.

There is an interesting experimental study of conformity behavior, which clearly indicates the existence of many individual differences.[18] Observers were stationed at street intersections protected by traffic signs, and they noticed the behavior of motorists who approached the crossing. Most of the drivers heeded the stop sign, some proceeded through the intersection at a reduced speed, a few slowed down their

[16] *Folkways* are the social customs of the group. In our culture, for example, it is customary to eat with knife, fork, and spoon; whereas the Chinese eat with chopsticks. This is a simple illustration of differing folkways between the groups. *Mores* are standards of conduct which are approved and enforced by the group. To depart from the mores of the group is certain to bring disapproval or punishment; to depart from the folkways may bring derision or may indicate lack of sophistication. See W. G. Sumner, *Folkways* (Ginn, 1906).

[17] For an informative and readable account of life among the Amish people of Pennsylvania, see J. W. Yoder, *Rosanna of the Amish* (Huntington, Pennsylvania: Yoder, 1940).

[18] F. H. Allport, "Psychology in Relation to Social and Political Problems," in *Psychology at Work*, P. S. Achilles, ed. (McGraw-Hill, 1932).

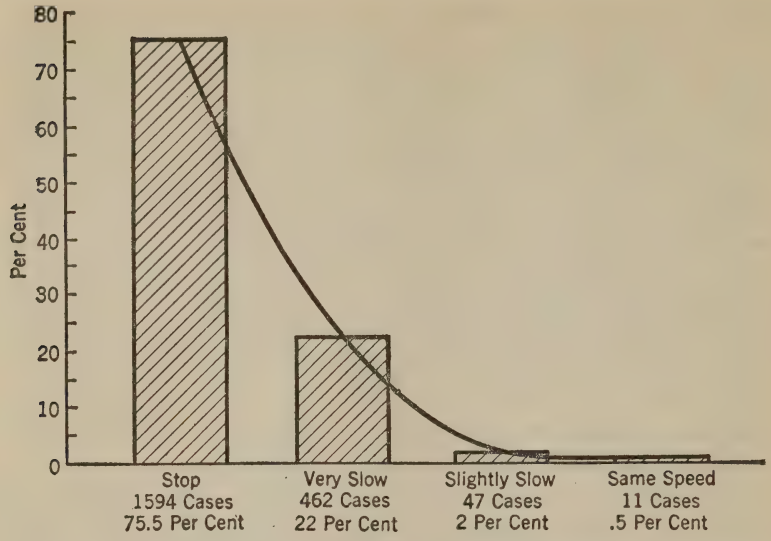

FIG. 35.—NOTE THE DIFFERENCE BETWEEN THE SHAPE OF THIS CURVE AND THE ONE IN FIGURE 36. Here the intersections were guarded by traffic signals, which were heeded by most of the drivers. This type of curve, which results when behavior is largely determined by the desirability of conforming to regulations, is called the J-curve. In general, when the social pressures are great, people tend to be distributed according to the J-curve. Some nonconformists pay no attention to rules and laws, however, and some merely go through the motions of compliance. From Allport's data.

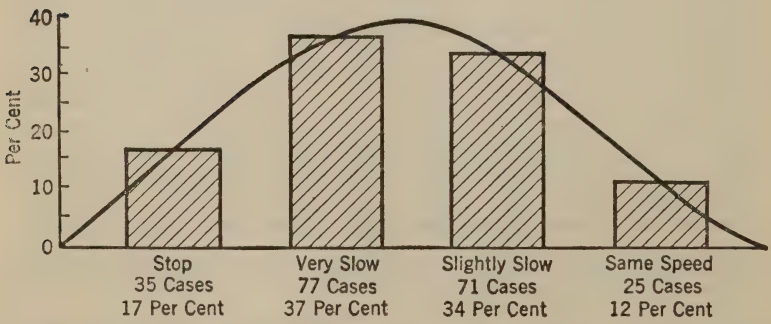

FIG. 36.—THIS CURVE (from Allport's data) SHOWS HOW AUTOMOBILE DRIVERS BEHAVED AT STREET INTERSECTIONS WHERE THERE WERE NO TRAFFIC SIGNALS. The curve indicates that many factors, operating in chance fashion, were operative.

cars a bit, and a small number paid no attention to the sign. This is a good measure of outward compliance to a powerful stimulus designed to induce conformity behavior. Note that the curve takes the form of a reversed J. The observers also noted the behavior of drivers at dangerous intersections unprotected by signs. Here the drivers acted quite differently. Some drivers came to a complete stop, whereas others did not reduce their speed at all. Most of the drivers slowed down, however, and crossed over the intersection with some caution.

It is evident from investigations of this type that people conform more or less satisfactorily when there is a strong motive for doing so. The threat of a fine or the likelihood of an argument with a traffic policeman is a strong pressure to induce conformity. A system of definite rewards and punishments establishes a felt need for conformity. Some people, however, do not conform even when the pressures to do so are strong. No matter how definite a set of regulations may be, there are always a few people who find a perverse satisfaction in disobeying them.

Some fundamental wishes.—An interesting way whereby to explore some of the dependable motives of an individual is to ask him to state his three greatest wishes. With young children it is possible to motivate this inquiry by recounting the fairy story of the man who was able to have three, and only three, wishes fully gratified. A skilled interviewer will have little difficulty in obtaining answers from nearly any adult. The responses furnish valuable insights into the personality and the motivation of the individual.

An unpopular boy who was failing in his eighth grade work wished (*a*) to be rich, (*b*) to be grown up and not to be required to attend school, and (*c*) to have a big automobile. Evidently, his lack of ability to generalize is indicated by his first and third wishes; and leads for further questioning about his daydreams are revealed by these wishes. Most adults wish for money, vocational success, health for themselves and their relatives, and for social approval. Few people express a wish for inner powers whereby they may gain desirable objectives, but they wish for tangible benefits which these inner powers might bring to them. Since human

motives are enormously complex and since they vary greatly among people, it is exceedingly difficult to group the wishes under appropriate general headings. As a technique for gaining a better understanding of an individual's frustrations and motives, this little study has considerable use.

Mixed motives.—Almost never is the behavior of an individual directed by a single motive.[19] Likewise, it is seldom possible to say that one single motive is dominant in anything we do. Whenever we analyze our own behavior, we find that we are striving to reach a variety of specific goals. A study of advertisements in the latest issue of the *Saturday Evening Post* is rewarding because it reveals the fact that motives are highly complicated and that there are great individual differences in our responsiveness to these appeals. If we are considering the purchase of a new automobile, we attend specifically to those advertisements which describe cars within our budget. Some of us are motivated to investigate the matter further if the advertisement promises economy of operation, if the car has much chromium plate, or if the new features of that particular make are presented attractively for us. We might be responsive to an appeal to buy the car and see America. Some of us might be motivated to get the car because it would make our neighbors jealous. In short, motives are not only mixed, but they are also specific.

The Pathology of Motivation[20]

An individual who is in a state of chronic indecision is said to have *abulia*. Although he is definitely upset and in a condition of disequilibrium, he cannot determine upon any course of action which might reduce the tension. A familiar illustration is the person who cannot make up his mind about what to order from the menu. Somewhere along the line, the individual who suffers from abulia has failed to

[19] It would be worthwhile to review *Macbeth* or *Hamlet* and to try to figure out exactly what were the motives of the principal characters of these plays. For a long-continued and intensive study, see E. V. C. Berne, *An Investigation of the Wants of Seven Children,* University of Iowa Studies in Child Welfare, IV (1929), 2.

[20] The literature on the pathology of motivation is immense. For a readable introduction to this topic from the standpoint of psychoanalysis, see Karl Menninger, *The Human Mind* (Crofts, 1930).

receive proper training in making decisions. Perhaps his parents decided for him. Possibly he made a number of choices which resulted in unsatisfying outcomes. At any rate, he is in a sad condition, for he usually has the normal amount of motivation, but he can find no adequate outlet for expression. One who suffers from abulia needs patient training and guidance in making simple decisions at first, and then gradually he may learn to decide more important matters for himself.

Obsessions and compulsions.—Most of us have had the experience of saying a word or phrase over and over to ourselves until we have become tired of it. Possibly a certain tune has "rung in our heads" until we have become distracted. Perhaps we have had the silly impulse to get up and yell at the formal gathering, and we may have been disturbed by the thought of the consequences if that impulse got the better of us. These are homely examples of obsessions. More formally defined, an *obsession* is a persistent irrational impulse. Some obsessions are trivial and unimportant; others may disrupt a person's life. For example, an elderly gentleman was bothered by the thought that he might be buried alive; hence he spent the last decade of his life in constructing a tomb equipped with water, electricity, and ventilation. He left money to pay some one to make daily visits to his place of interment and to assist him out of his coffin should he come to life again.

A *compulsion* is a strong urge to perform some definite act, such as walking on the lines of a cement sidewalk or touching fence posts. The motive which leads to a compulsion is specifically carried out in behavior, whereas an obsession is merely a persisting urge to do the act. One who checks the doors several times before going to sleep has a compulsion. A young man had to climb out of bed night after night and touch various objects on his dresser in a regular order before he could go to sleep. Although he was vexed with himself for having this silly desire, he was impelled to carry out the ritual every night.

Manias.—Unusually strong obsessions and compulsions are called *manias*. Thus, an individual who must gratify his desire for excitement may set fire to a building in order

to watch the conflagration and to see the firemen at work. This type of behavior is called *pyromania,* and it indicates a serious mental condition which should be treated by a psychiatrist. A desire to go on a prolonged drinking spree is called *dipsomania.* When seized by this uncontrollable urge, the dipsomaniac may drink excessively for a week. After his impulse has subsided, he may then go for a month or two without touching a drop. Anyone who has ever nursed a dipsomaniac patient during his period of recovery from a spree is well aware of the fact that he does not drink to be sociable or even because he enjoys the whiskey. His impulse becomes irresistible, and he will go to any lengths to satisfy it.

The morbid impulse to steal objects that are of no extrinsic value to the individual is called *kleptomania.* The true kleptomaniac gets a perverse thrill out of shoplifting, and may even endanger his position in society or his retention in employment when the impulse takes possession of him. Oftentimes he will steal articles which he could easily purchase. Many theories have been advanced to account for kleptomania, but no one of them has ever found complete acceptance by psychologists and psychiatrists. Still another common mania is called *bulimia.* This is the impulse to eat excessive amounts, far beyond the needs to satisfy hunger. Literally, the person who has bulimia goes on an "eating jag." Of course, there are many other types of manias, all of which are likewise characterized by an unusually strong impulse to perform some specific act or other.

Motivation, in all its varied aspects, is closely related to our emotional natures. In fact, it is somewhat academic and traditional to consider these two topics separately. In our next chapter, therefore, we shall have frequent occasion to elaborate upon this discussion of motivation and to go into more detail regarding the dynamics of behavior.

QUESTIONS AND EXERCISES

1. Can we infer what motives lead us to do certain acts? Are we sure that these motives really were at the basis of our behavior, or do we merely believe that such was the case?
2. Recall from your reading some examples of people who have

been reduced to a condition of ravenous hunger and thirst. Point out the main differences between their behavior and that of people in normal circumstances. Show clearly how various social motives are related to the satisfaction of our basic drives.

3. A motive is sometimes defined as a persisting stimulus. Is that a suitable definition? Is pain a motive? What does it lead some people to do?
4. In one of Walt Whitman's poems the author expresses a momentary envy of lower animals, saying, in effect, that they have few desires and few frustrations. Is it true that people who live on a low cultural plane have few motives? Explain.
5. How do professional organizations motivate us to conform to the code? What advantage do we gain by conforming to the group standards?
6. Recall from your own educational careers some examples of how you have been trained to be strongly motivated by rivalry and emulation. Do you believe that it is a mistake to place so much emphasis upon competition? Would people work efficiently if they were not motivated by this urge?
7. Ask some acquaintances to tell you their three basic wishes. What can you learn about their personality organization from your analysis of their wishes? Point out the ways wherein people differ in their fundamental wishes.
8. Simple aberrations of motives are rather common. Most of us have some obsessions and compulsions. Draw up a list of those which you have and of those which you have observed in other people. For instance, do you have an impulse to count things? Do you feel uncomfortable unless you carry out silly rituals, such as touching things in a definite order or getting everything into line?
9. We develop a "philosophy of life" whereby we can endure inevitable disappointments and frustrations. Is this philosophy a verbalized or fictitious way of maintaining a state of complacency? Is a philosophy necessary for each of us?
10. Analyze the specific motives aroused in ten good advertisements. What techniques have been used to arouse each motive? What aspects of these motives are related to basic physiological drives, and what ones are appeals to our learned desires?
11. Why do the psychoanalysts make no distinction between motive and emotion? Is an unsatisfied strong motive really an unpleasant emotion? Do we have an emotion of elation

when we have satisfied a powerful motive, such as gaining a position of distinction for which we have worked a long time?

12. What are the principal motives which induced you to prepare yourself for the nursing profession? Why is a knowledge of motivation a necessary part of the equipment for everyone who deals with the public? Is it particularly necessary for the nurse? What motives lead sick people to consult quacks or to postpone necessary operations? What motives would you seek to arouse in reëducating such people?
13. Can you explain all the complex varieties of human behavior by positing one or two "basic motives"? Explain your answer. Are your own motives specific or general? Give illustrations to justify your answer.
14. Is it true that a highly intelligent person is likely to be maladjusted because he or she has many unsatisfied wants? Would an intelligent person be able to work out a technique for achieving the goals? Is a stupid person more happy than one who is intelligent? Justify your answer.

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CHAPTER VI

EMOTION

Fear, anger, joy, grief, elation, disappointment—everyone knows from personal experience the meanings of terms like these. In an unabridged dictionary there are literally hundreds of words which designate specific varieties of human emotions. Even though a person has never opened a textbook on psychology, he knows a great deal about the importance of emotions in daily life. Happiness and despair, exaltation and gloom, delight and sorrow—these extremes make life worth the living or induce thoughts of self-destruction. From a study of psychology we can organize our knowledge of emotions, we can learn how they are developed, and we can thereby gain a greater measure of control over them. A famous psychiatrist has said that one of the greatest discoveries of modern psychology is the recognition of the importance of emotions in human life.[1]

Emotion and Motive

The unity of mental life.—For the sake of convenience we have had to divide our study into appropriate topics, with a chapter or two devoted to each of them. There is a real danger, however, that we may think of the human mind as being divided into compartments. This error led to a point of view known as faculty psychology, which assumes the existence of separate mental faculties, such as memory, feeling, willing, and reasoning. As a matter of fact, the mental life is a coherent, dynamic whole. Only for expediency do we consider motivation and emotion separately. When we analyze one of our own motives, we find that it is not only a

[1] Attributed to the late W. A. White, M.D. This truism is also expressed in the hackneyed aphorism: We are specks of intelligence afloat upon seas of emotion.

tendency to strive for a certain goal, but that it is also a strong feeling. If, for example, we should encounter a rattlesnake while walking in the woods, we would not only be startled or frightened, but also we would have a strong impulse to jump to a safe place.

In the newborn infant the basic drive is that of regaining or maintaining the optimum physiological balance. If the infant is healthy and comfortable, it sleeps most of the time. Accompanying this desirable condition are various signs which indicate that the infant is satisfied. After a few weeks the normal infant commences to smile, coo and gurgle, and engage in simple play activities. Obviously, the emotion which goes with this normal state of affairs is one of pleasure, relaxation, or contentment. When the balance is lost, however, the infant cries and struggles. The muscles become tense, the face is contorted, and the blood pressure is raised. By these familiar signs the mother knows that something is definitely wrong with her child, and she tries to restore the balance.

Literally, *emotion* (from the Latin verb *emovere*) means a stirred up condition of the individual. The infant who is ill, in pain, or hungry is stirred up in a very real sense of the term. It is quite evident that the motivation is directed towards the removal of this disagreeable condition. In a remarkably short time the infant learns that adults give him welcome attentions when he displays these signs. Thus he commences to display these indications of a stirred up condition, not because his physiological equilibrium has been upset, but because his mother does pleasing things for him. He learns how to adapt the expression of his emotions to secure the maximum attentions from other people and thereby to gain the greatest satisfactions for himself. Of course, these techniques are not acquired as a result of reasoning on the part of the infant. On the contrary, they are learned by a simple trial-and-error process.

In short, when the mental life is studied from the genetic point of view, it is apparent that all these lines of demarcation, such as that between motive and emotion, are really nonexistent. Except for a few specific responses (called reflexes), the infant responds "all over" to the situations

which confront it. Clear-cut distinctions among the complexities of response patterns are found only in the analyses made by sophisticated adults, such as novelists, dramatists, or students of psychology. The genetic approach to a study of human emotions is useful because it clears away a number of these confusing misconceptions.

The basic emotional responses.—The origin of our complex emotions is relatively simple. As we have already noted, the condition of optimum physiological equilibrium is accompanied by signs of what we refer to as pleasure, satisfaction, or complacency; and the loss of this balance is attended by indications of distress, annoyance, or tension. These two well-differentiated patterns of response are the original materials out of which adult emotions have been built. In other words, the basic emotions are two in number: complacency, and excitement.

An important observational study of infants from birth to the middle of their second year of life has shown how emotions become differentiated and specific.[2] Even in the early days of infancy the emotions of distressed and delighted excitement emerge from the primitive pattern of excitement. As time goes on, the emotion of distressed excitement becomes differentiated into such specific patterns as the "fearful," the "angry," or the "disgusted." Likewise, these specific response patterns become attached to definite persons or situations, and they become the habitual accompaniments of behavior directed towards various specific goals. Thus, for instance, the young child might exhibit a highly individualized pattern of "angry excitement" if he is not taken for an airing at the usual time.

Although many philosophers have set forth neat lists of "innate" emotions, their contributions are of little value to the student of psychology. These lists are nothing more than the products of armchair theorizing, a method with which modern psychology has little patience. Observational studies

[2] K. M. B. Bridges, "A Genetic Theory of the Emotions," *Journal of Genetic Psychology* (1936), pp. 516-519.

One of the most important recent contributions to genetic psychology is W. E. Blatz, *The Five Sisters* (Morrow, 1938). This book deals with psychological studies of the Dionne quintuplets. Every student of psychology should read it.

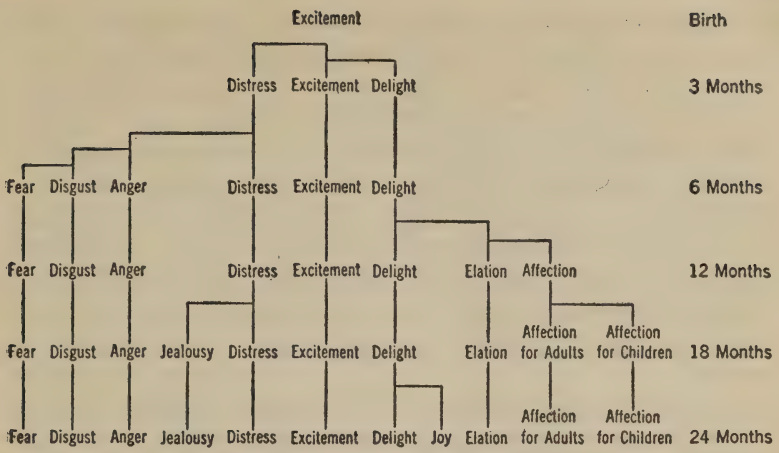
Excitement
Birth
Distress Excitement Delight
3 Months
Fear Disgust Anger Distress Excitement Delight
6 Months
Fear Disgust Anger Distress Excitement Delight Elation Affection
12 Months
Fear Disgust Anger Jealousy Distress Excitement Delight Elation Affection for Adults Affection for Children
18 Months
Fear Disgust Anger Jealousy Distress Excitement Delight Joy Elation Affection for Adults Affection for Children
24 Months

FIG. 37.—NOTE THAT THE EMOTION OF EXCITEMENT UNDERGOES GREAT DIFFERENTIATION DURING THE FIRST TWO YEARS OF LIFE. FROM A GENERALIZED, DIFFUSE REACTION IT DEVELOPS INTO A NUMBER OF SPECIFIC EMOTIONAL RESPONSES. From K. M. B. Bridges, "Emotional Development in Early Infancy," *Child Development,* III (1932), 341-342.

on infants and young children are infinitely more valuable, especially when the observer is not precommitted to a definite theory. These studies reveal the fact that even in the first year of life the infant's emotions undergo considerable modification and differentiation.

FRUSTRATION AND EMOTION

The basis of frustration.[3]—As we have seen in the preceding chapter, a *frustration* is a mental condition resulting from the blocking of a strong drive or motive that normally gives satisfaction. When a frustration is strong, there is a great amount of tension and the balance is profoundly upset. For example, if a young painter finds that the critics laugh

[3] The following references should be read in this connection:

J. Dollard, L. Doob, N. Miller, O. Mowrer, and R. Sears, *Frustration and Aggression* (Yale University Press, 1939).

A. H. Maslow and B. Mittelmann, *Principles of Abnormal Psychology* (Harper, 1941), chap. vii.

See also *Psychological Review,* XLVIII (July, 1941), No. 4, the seven articles on frustration beginning on p. 337 and *Psychological Review,* XLVII (Sept., 1940) No. 5, pp. 451-470, the article on "Criteria of Frustration" by Stewart Henderson Britt and Sidney Q. Janus.

at his paintings instead of giving him encouragement, his mental equilibrium is greatly disturbed to say the least. When parents say *No!* to a youngster who keenly desires to go to the movies, they present a frustration which may be quite upsetting. It is important to note that frustrations may be symbolic as well as objective. The child who is confined to the safety of the backyard by a fence is restrained by an objective frustration. The child who is told, "My mother says that I can't play with you any more," is the victim of a symbolic frustration. In either case the basic mechanisms are similar: a strong motive is blocked by an obstacle.

The social order in which we live and the philosophy of life by which we govern our affairs determine many of our frustrations.[4] In certain social groups there are relatively few frustrations for the basic physiological drives, and there is little emphasis upon the acquirement of complex social motives. In other groups it is customary to think of life as an almost unendurable series of frustrations, from which dreary existence death alone will give a release. Evidently, therefore, people who live in a social order that is relatively simple will have an easier time in maintaining the emotion of complacency. Those who live in a complex social order with a high standard of values may not only acquire motives which cannot readily be satisfied, but also they have an intensified feeling of competitiveness. Some theological systems place great emphasis upon the supposed fact that we live "in a vale of tears," that we are "sinners in the hands of an angry God," or that dreary toil and disappointments are inevitable in "this earthly life."

The emotional accompaniment of any frustration is a feeling of distress and tension. If, for example, we cannot readily find the solution to a problem in mathematics, we become somewhat tense and disturbed. To a certain extent, this condition makes us more determined to discover the solution. Our mental activity is reënforced and strengthened; we tackle the job with greater zeal. If, however, the answer

[4] Very few psychiatrists have appreciated the importance of social factors. For an exception, see Karen Horney, *The Neurotic Personality of Our Time* (Norton, 1937).

still eludes us, the tensions increase to a point where our behavior may become disorganized. Most of us have seen a high school pupil fling his algebra textbook to the floor, crumple up his papers, and give up attempts to do the assignment. This is a familiar example of the disorganizing effects of strong frustrations. Parents and teachers try to guide the youngster to utilize this energy in making a determined, intelligent attack upon the difficulties. When by his own efforts he does solve the problems, he experiences a thrill of satisfaction and elation. He has to be taught that one of the greatest joys of life is to overcome certain obstacles, and thus to resolve the tensions.

Frustration tolerance.[5]—It is evident that there are great individual differences in the way people behave towards obstacles. For some people life is full of frustrations and disappointments. For others, there seem to be a minimum number of situations which occasion their distress. A situation which would be a bitter disappointment for one individual might be a matter of indifference to another. The extent to which a person is able to endure frustrations without becoming emotionally disorganized is called his *frustration tolerance.*

A few examples may be helpful in making this term clear. A middle-aged woman had qualified for the nursing profession at a time when the educational standards were rather low. At the age of forty-four she was appointed to a state board for the licensing of nurses, but the civil service commission refused to confirm the appointment because she had not even completed a high school course. Of course, she was greatly upset emotionally, but she proceeded at once to secure the necessary educational qualifications. First, she passed the high school examinations set by the state department of education. Then, she attended college—winter and summer—until she had earned the bachelor's degree. Finally, she qualified for the master's degree in biology at one of the greatest universities in the country. It is evident

[5] See the following articles by S. Rosenzweig: "Types of Reaction to Frustration," *Journal of Abnormal and Social Psychology,* 1934, 29, 298-300; "Frustration as an Experimental Problem," *Character and Personality,* 1938, 7, 126-128.

from this bare recital of a true story that she would not be defeated by any frustration. A person with a low frustration tolerance would have given up at the outset and regarded the case as hopeless. A young man was eager to become a civil engineer, but upon finding out that the courses were difficult he asked advice about finding another vocation which would be easier. A college girl was not selected for a rôle in a dramatics production for which she tried out; therefore, although she was greatly interested in amateur dramatics, she never tried again. In these instances, of course, the frustration tolerance was very low.

Responses to frustrations.—The first important factor determing the individual's response to a frustration is his age. The young child tends to become angry when his desires are thwarted, and to express his anger immediately. In the infant, the only situation which will evoke a tantrum is some restraint of muscular activity. Later on, however, the emotion becomes attached to many other situations, and its manifestations become greatly subdued. The child is predisposed to struggle overtly to remove any frustration which thwarts the satisfaction of a motive. The sophisticated adult, on the other hand, has learned to control and direct this emotional response in such a way as to develop plans for overcoming the obstacle. The reason why this primitive reaction is modified is obvious. Other people have no patience with a young person or an adult who has a temper fit whenever he cannot immediately get his own way. In order to avoid being rejected by the group, the youngster soon learns that the anger emotion must be subdued.

A second important factor determining an individual's response to a frustration is his health condition. Everyone knows that it is exceedingly difficult to control the emotions when one is ill. Lack of sleep, digestive ailments, excessive smoking, or incipient symptoms of a cold—these are rather familiar conditions which upset emotional control. A person might control his temper under all normal circumstances, but a slight frustration might provoke him to a temper tantrum when he is sick. If we wish to meet the minor crises of life with intelligent foresight and calm deliberation, we need to keep ourselves in the optimum physical condition.

A third important determinant of responses to frustrations is the individual's past experience. If he has had his desires gratified when he became angry, he is predisposed to have a tantrum whenever he is frustrated. Overindulgent parents may unwittingly train their children to become emotionally disorganized in frustrating situations. An unfortunate lad developed infantile paralysis shortly after his mother had died. After his recovery the father gave the crippled boy practically everything he wanted. When the boy was entered in public school, he created many difficulties for classmates and teacher. At the slightest frustration he would have a violent temper outburst. As he grew older, his tantrums increased in severity and frequency; and finally he had to be placed in a special school. The great majority of individuals, on the other hand, learn how to utilize their emotions in making a planned attack upon the frustrating situation.

A fourth important factor in determining the individual's response to a frustration is the nature of the motive itself. Some wishes are of minor and transient importance, and we adjust rather easily to situations which block their gratification. Other wishes are considered to be exceedingly important, and we feel determined to find some way of satisfying them. Through the reading of novels, by daydreams, or at the movies we can find substitute gratifications of many frustrated wishes. A man who has a strong wish to be important may, for a small fee, join a lodge and become the proud owner of a high-sounding title. Thus he is said to compensate for his frustrations. In fact, there are innumerable techniques for obtaining substitute gratifications for strong wishes which cannot be directly satisfied.

Fears, Phobias, and Anxieties

The normal stimuli for fear.[6]—If an infant is presented with a sudden, intense form of stimulation, such as a loud noise or the collapse of its bed, it displays a definite emo-

[6] For an account of the observational studies which led to this statement of the "original stimuli for fear," see J. B. Watson, *Psychology from the Standpoint of a Behaviorist* (Lippincott, 1929), pp. 230ff. A criticism of this work will be found in M. and I. Sherman, *The Process of Human Behavior* (Norton, 1929), chap. v.

tional reaction which we call fear. This intense emotional reaction involves many physiological changes. The normal bodily rhythms are completely upset, and it takes a long time to quiet the infant. As the child grows older, the number of situations which provoke the fear reaction increase in number, and the manifestations of fear undergo considerable modification. The youngster is taught to be afraid of crossing the highway without looking carefully in both directions, of using a common drinking cup, of incurring parental displeasure by misbehavior, or of petting a strange dog. In fact, it appears necessary to teach children to have a number of specific fears in order to protect them against the common dangers of life.

Strong fears serve little purpose in modern society. They disrupt our behavior and prevent us from making an intelligent adjustment to a situation. For instance, a person who is suddenly called upon to make a speech before a large group may have a definite experience with the effects of "stage fright." The thought processes may seem to be speeded up, but the muscles are paralyzed and not a word can be spoken. A sudden, intense form of stimulation for which we have no habitual mode of response may find us completely disorganized and ineffectual.

Phobias.[7]—A particularly useless and disruptive fear is called a *phobia.* Many people have acquired a variety of these irrational responses. For instance, a young woman had a morbid terror of cats ever since she had seen a pet kitten have a fit. She could not bear to be in the same room with a cat thereafter. A college professor had such an excruciating ordeal during his first visit to a dentist that he was disorganized for days before each dental appointment henceforth. A child who is punished by being shut up in a small dark closet may go through life with a condition known as *claustraphobia* (fear of small inclosed places). The specific number of phobias which various people have acquired runs into the hundreds, and an imposing list of terms has been developed to name them.

[7] For an account of the development of specific phobias, see E. Bagby, *The Psychology of Personality* (Holt, 1928). For an interesting case history, see W. E. Leonard, *The Locomotive-God* (Appleton-Century, 1927).

When specific phobias are investigated carefully, it is discovered that there are some uniform characteristics among all of them. First, the phobia usually originated in an intense fear-stimulating situation during the individual's early childhood. There has been an unfortunate experience which has made a lasting impression upon the individual. Secondly, the individual seeks thereafter to avoid a similar experience. Hence, paradoxically, the phobia is seldom experienced again. A person who has a morbid dread of snakes or cats tries to avoid any contact with those animals. Thirdly, the individual almost never analyzes the reasons for his irrational fears. Possibly the original circumstances were such as to make him ashamed of himself; hence he seeks to avoid thinking of them again. At any rate, the whole matter is unpleasant; consequently he does not like to discuss it. Fourthly, when he is induced to talk about his phobia and to recall the original circumstances in which he acquired it, the phobia usually begins to disappear. There is no guarantee, however, that it will not reappear.

Some individuals acquire a generalized phobia that manifests itself as *social timidity*.[8] They tend to withdraw from their fellows and to become emotionally disorganized in groups. For instance, a timid young man could not think of anything to say when he was in company. If a question were directed to him, he would respond by stuttering, blushing, and being confused. Afterwards he would reproach himself for not having been at his ease, and then he would think of many things that he might have contributed to the group. The origin of this generalized fear response is similar to that for the specific phobias. The individual has had one or more humilitating, frustrating experiences in making a satisfactory adjustment to other persons. Perhaps he may have been ridiculed or reprimanded publicly, and now he has a fear that such a distressing situation may recur. Therefore, he seeks to avoid every situation which might upset him again.

Anxieties.—A persisting, generalized fear is known as an *anxiety*. A situation which seems to threaten our security

[8] See E. R. Guthrie, *The Psychology of Human Conflict* (Harper, 1938), pp. 283ff.

arouses our anxiety. We commence to worry about our ability to maintain or restore the state of affairs which gives us the maximum of satisfactions. In turn, our worry enhances the emotional tensions and thus increases the fear. A sick person is likely to be anxious about his chances for recovery, about mounting expenses, or about the impending operation. An individual may be anxious about developing a cancer, losing his job, flunking out of college, or having a tire blow-out. Some anxieties may be momentary and trivial; others may become habitual and disrupt a person's life.

Strong anxieties are accompanied by a number of physiological manifestations. Heart beat may be rapid, there may be a "lump in the throat" (*globus hystericus*), digestion may be affected, and there may be excessive perspiration. In fact, the normal physiological rhythms may be profoundly disturbed while the anxiety attack is at its height. Familiar symptoms are as follows: excessive smoking, insomnia, loss of appetite, and a general feeling of great physical weakness together with an impulsion to ceaseless, though useless, activity. Those who have acquired the habit of being anxious may experience these attacks without knowing specifically what they are worried about. An hygienic regimen will usually help such cases.

The standard therapy for the treatment of anxiety is to give reassurance to the individual. Hence a physician, who has a great deal of prestige for most people, may assure the individual that he has no reason to worry about his physical condition. The social worker is sometimes able to suggest a plan for meeting the expenses incurred by a sick person, and thus to alleviate the anxiety. Old age insurance, workingmen's compensation acts, and unemployment benefits have done a great deal to remove the anxieties of many people. Inherent in our social order are many conditions which make a reflective person anxious about his own future and about the security of his family. Attempts to give reassurance are, therefore, sometimes very difficult, and they may fall upon deaf ears. As in all other pathological conditions, the best therapy is that which prevents the condition from arising in the first place.

The Physiology of Emotion

Muscular responses.—The purpose of an emotional reaction is to secure for the individual a better adjustment to the situation. If, therefore, the situation thwarts the expression of a motive, the body undergoes various changes whereby the level of activity is raised to a point where the frustration may be overcome. If the situation threatens the safety of the individual, a sudden fright brings him to a stop or impels him to flee at once. Should the situation be gratifying to him, he makes strong efforts to maintain this

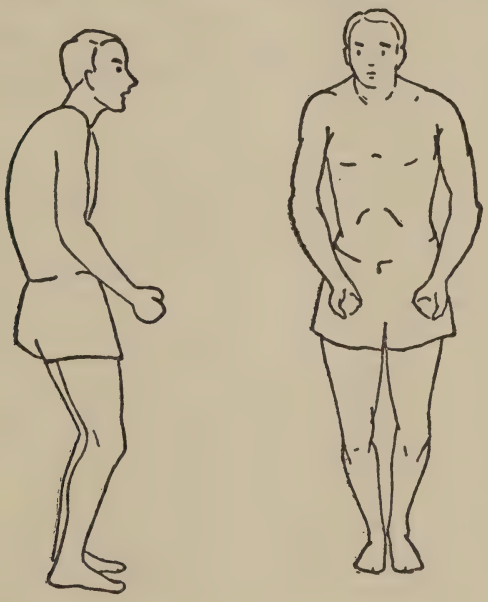

Fig. 38.—The overt response in a startle pattern. From W. A. Hunt and Carney Landis, *Journal of Experimental Psychology,* XIX (1936), 312. By permission of the publishers. Also see Carney Landis and William A. Hunt, *The Startle Pattern* (New York, Farrar & Rinehart, 1939).

favorable condition of affairs. Thus the individual may struggle, tremble, relax, or in any other way use the various muscles in responding to the situation. Among the muscular responses which have great social significance are those of the face. Other people try to infer our emotions from our facial

expressions. However, facial expressions and postures are not always true indices of emotional states.

By means of a high-speed camera it is possible to photograph an individual's muscular responses to emotion-provoking situations.[9] If an infant is frightened by a revolver shot, he responds by a variety of muscular movements. Among them are the following: blinking the eyes, facial contortions, lifting the head forward, rapid kicking, contraction of the abdomen, and bending the elbows. None of these responses is, of course, a purposeful adjustment to the situation. The fact is that when the infant is violently startled he responds with many of the muscular activities which he has in his repertory. As a result of maturation and learning, the adult may acquire the ability to make some purposeful, adjustive responses to situations of this type.

A common diversion is to have someone try to depict a series of emotions, and then have the audience write down their judgments about the various emotions represented. This simple experiment shows that there is a considerable amount of difference among the judges and that the muscles around the mouth and eyes furnish the best clews. Actors and actresses are able to depict various emotions by a conventionalized, exaggerated method of representation. In one experiment it was found that nurses, physicians, and advanced students of psychology were unable to agree upon the emotions of infants when they did not have an opportunity to see what situation had induced the reaction.

Visceral reactions.[10]—By far the most research work has been devoted to a study of the visceral accompaniments of emotional conditions. When an individual is in a state of optimum physiological balance, the visceral organs carry out the metabolic functions in a definite rhythm. In the adult, emotions such as serenity or philosophical contentment favor the continuance of all these normal, healthy bodily functions. Excitement, however, changes the pattern by upsetting this

[9] The immediate reaction to an emotion-provoking stimulus is called the "startle pattern." See W. A. Hunt and C. Landis, "Studies of the Startle Pattern: I. Introduction," *Journal of Psychology*, II (1936), 201; "II. Bodily Pattern," *ibid.*, 207; "III. Facial Pattern," *ibid.*, 215.

[10] See E. J. Kempf, *The Autonomic Functions and the Personality* (Nervous and Mental Disease Publishing Company, 1918).

equilibrium. As one great physiologist has expressed it, the body is suddenly put into readiness to fight or to run. Blood pressure is increased, digestion ceases, the heart beats more rapidly, and the tonus of the skeletal muscles is raised. In short, the body is prepared for an emergency.[11]

In order to understand the complicated mechanisms which control these physiological functions, we need to know something about the autonomic nervous system.[12] The ganglia of the autonomic system are located on either side of the spinal cord, and they are connected with the cerebrospinal nervous system by a set of nerve fibers which carry impulses into the autonomic system. In other words, the autonomic nervous system receives its impulses from the cerebrospinal system, and it is not directly connected with any of the sense organs. The cranial and the sacral portions of the autonomic

TABLE 1*

THE RESULTS WHEN A GROUP WAS SHOWN MOTION PICTURES OF THE EMOTIONAL REACTIONS OF INFANTS. THE GROUP WAS INFORMED ABOUT THE TYPE OF REACTIONS WHICH THEY WOULD SEE, BUT NOT WHAT STIMULUS WAS APPLIED.

ACTUAL STIMULUS	JUDGMENTS (IN PER CENT)				
	Hunger	Pain	Anger	Fear	Don't Know
Hunger	10	49	26	15	0
Needle prick	18	20	20	33	9
Restraint	18	23	31	18	10
Dropping	21	19	27	30	3

* From M. Sherman, "The Differentiation of Emotional Responses in Infants," *Journal of Comparative Psychology*, VII (1927), 265–284.

system make up the parasympathetic system, and the central portion (the thoracicolumbar section) is called the sympathetic system. A considerable amount of evidence supports the conclusion that the sympathetic portion controls the strong emotional reactions which occur in fear, rage, and other emergency responses, and that the parasympathetic

[11] An account of the "emergency theory of emotions" is to be found in W. B. Cannon, *Bodily Changes in Pain, Hunger, Fear, and Rage* (Revised) (Appleton-Century, 1929).

[12] Review Chapter IV.

portion is concerned with the routine physiological functions and the milder emotions.

All the visceral organs and many of the glands have a dual system of motor fibers, one of which comes from the sympathetic portion, and the other from the parasympathetic portion, of the autonomic nervous system. In a sense, these two divisions (the sympathetic and the parasympathetic) are opposed to each other. For instance, the parasympathetic portion controls the normal rate of heart beat and the digestive functions, but the sympathetic portion accelerates heart beat and inhibits digestion. Thus, when many motor impulses come from the sympathetic section of the autonomic system, the whole physiological balance is upset. Blood pressure is raised, pulse rate is heightened, digestion ceases, certain glands (particularly the adrenals) are stimulated, and many other profound alterations occur. When the parasympathetic portion is in dominance, however, the normal physiological rhythms of the body are established.

Glandular responses.[13, 14]—Two of the endocrine glands are known to have an important relationship to emotion—the thyroid and the adrenals. Many women have observed that when they become excited or upset there is a swelling at the base of the neck. This condition is known as hyperthyroidism. During the first World War large numbers of soldiers in the front-line trenches had serious thyroid disturbances. After a few weeks they came back to the rest camps with the protruding eyes, haggard face, and bulging neck which are symptomatic of hyperthyroidism. It is said that the old Romans sometimes tied a thread about the neck of an accused person, expecially if the suspect were a woman, and then adjudged the individual guilty if the thread were broken. If, on the other hand, the thyroid does not function actively, the individual is likely to be unemotional, calm, and phlegmatic. This condition is known as hypothyroidism.

The most important endocrine glands involved in strong emotions are the adrenals. From the medulla (inner part) of these glands comes a potent substance known as adrenin.

[13] Review Chapter IV.

[14] For a nontechnical, popularized account, see L. Berg, *The Human Personality* (Prentice-Hall, 1933), chap. iv.

Even in very small amounts this secretion produces great effects. A few of the important changes brought about when adrenin enters the blood stream are the following: rapid heart action, high blood pressure, release of glycogen (blood sugar) from the liver, perspiration, lessened sense of muscular fatigue, and inhibtion of gastrointestinal activity. These alterations are produced when the sympathetic portion of the autonomic nervous system stimulates the medulla of the adrenals. Because of the important rôle taken by these glands in strong emotion, they have been called "the mother of heroes and of cowards."

Emotions and Conflict

Mental conflict.[15]—When two strong incompatible motives are simultaneously aroused, or when there is a clash between the individual's desires and the demands or conditions of his environment, there is a *mental conflict.* Daily life furnishes innumerable illustrations of conflicts. For instance, an individual may become emotionally disturbed when the alternatives are an opportunity to leave school to take a job or to continue in school until graduation. A college girl who had married secretly was greatly upset about whether she ought to notify her parents or remain in college until she had earned her degree. The regulations of this college provided for the immediate withdrawal of any student known to be married before graduation. Not all conflicts are as serious and disruptive as these. In fact, most of the conflicts of daily life are relatively trivial affairs which involve only a momentary emotional disturbance. Thus, whether one should remain at home in order to study or go to the motion pictures might precipitate a mild conflict.

The most profound emotional conflicts are those which involve our ideals and standards of conduct. Few persons

[15] For an elaborate account of the psychoanalytic point of view regarding conflict, see J. F. Brown, *The Psychodynamics of Abnormal Behavior* (McGraw-Hill, 1940), Part III.

An invaluable little book which should be read by every serious student in this connection is B. Hart, *The Psychology of Insanity* (Macmillan, 1931).

A great deal of common sense advice is to be found in L. E. Travis and D. W. Baruch, *Personal Problems of Everyday Life* (Appleton-Century, 1941). This book represents one of the most successful attempts to popularize some of the established principles in scientific psychology.

are so well integrated that they escape the necessity of self-reproach for their actions. Many times we find our early teachings and moral ideals to be at variance with the standards of conduct of our best friends. Those of us who have been brought up to reverence the puritanical virtues may experience many profound emotional conflicts as we try to modify our ideals in accordance with the times.

When the issues are clearly faced, an emotional conflict does not produce a warped, neurotic personality. If, however, we seek to avoid a frank recognition of the problem, then serious trouble may ensue. In either case, whether the basis of the conflict is faced or not, there is certain to be an unpleasant emotional disturbance until the matter is resolved. Choice of a vocation, for instance, is an important problem for most young people. After they have squarely faced all the facts regarding their capabilities, intelligence, financial resources, and habits of persistence, they have resolved a great deal of emotional tension. If, however, they just drift into an occupation, for which they may be quite unsuited, they may become dissatisfied, discontented, and rebellious all the rest of their lives. Sound mental hygiene stresses the necessity for taking stock of ourselves and facing the facts. We can then work out a more or less satisfactory solution for our important problems, especially if we are able to profit by the wisdom of some trusted friends.

The psychiatrist is likely to emphasize the harmful and detrimental effects of emotional conflicts. Naturally, his work brings him into close relationships with many patients who have been unable to solve their own problems satisfactorily and whose personalities have been warped by their conflicts. There is reason to believe, however, that some conflicts may be highly desirable. If, for instance, we find that some of our conflicts arise from the fact that other people do not like us, we might scrutinize ourselves and find out why. Perhaps we have been sarcastic, gossipy, self-centered, or stingy. It is decidedly worth while to learn why we are rejected, even though the reasons may be disquieting to us. In short, when our own conflicts are squarely faced and when we are stimulated to self-improvement as a result, they may serve to direct our self-education into profitable channels.

Repression.[16]—A conflict that is not faced is said to be repressed. For example, if we have done something of which we are ashamed, we naturally find it unpleasant to think about the matter, and hence we exclude it from our minds. Of course, we cannot really put it out of mind, but we can try not to think about it any longer. That is what the term *repression* means. It is an active attempt to stop thinking about something which, nevertheless, keeps intruding into our consciousness. A simple example may help to make this concept more understandable. Imagine that we have an important assignment to prepare for tomorrow but that we accept an invitation to go to a party. Our pleasure is lessened by the constantly recurring thought that we should be at home doing the assignment. In other words, we have been unable to repress entirely our habits of getting work done on time. Another familiar illustration of repression—usually more successful—is the readiness with which we "forget" to repay friends from whom we have borrowed money. Most of us have had the experience of suddenly remembering that the time for our dental appointment has passed without our conscious intent to forget to keep the engagement. In other words, we "forgot" or repressed the matter because we do not like to visit the dentist.

A great deal of figurative language and many elaborate theories have been advanced to explain the simple phenomenon of repression. It is doubtful, however, whether these complicated interpretations add anything of importance to the subject. The simple fact is that in daily life we have many occasions for repressing the manifestations of strong emotion and for dealing with incompatible motives. Repression is a state of affairs in which the issues are not properly faced and in which a satisfactory solution is not achieved. Consequently, the repressed motives and emotions keep us in a constant state of tension and upheaval.

The control of emotions.—Of course, the best way to control the emotions is to make certain that faulty habits

[16] See Hart, *op. cit.*

See also W. McDougall, *Outline of Abnormal Psychology* (Scribner, 1926), chap. xi.

For a literary account of the effects of conflicts and repressions, see John Galsworthy's play, *Loyalties.*

of adjustment are never learned in the first place. Ideally, the emotions furnish us with an additional impetus to overcome obstacles and to solve our problems. Actually, however, strong emotions may disrupt our behavior and make us inefficient. Most of us, unfortunately, have acquired the habit of having excessive emotional reactions in many situations. The first suggestion, therefore, is that we should avoid situations which upset us. If we find ourselves thinking over our disappointments and humiliating experiences, we can turn to some hobby that will take our attention away from these matters. It is rather easy to form the habit of nursing our grievances and of hating certain people. Obviously, such thoughts arouse strong emotions and provoke unwholesome tensions. It is possible to acquire the habit of dwelling upon more desirable thoughts, and thus to avoid creating these emotional upheavals. Hobbies, good reading, wholesome friends, and an adequate philosophy of life are desirable for those of us who feel a need to avoid situations which provoke mental conflicts and emotional tensions.

A thorough understanding of human psychology is essential for proper emotional control. If, for example, we find that we are constantly upset by jealousy of our associates, we can apply our knowledge of psychology in trying to find out the basis for this undesirable emotion. By holding up a mirror before ourselves, we are able to objectify our emotion, and thus the tensions are lessened. If we are disturbed by phobias, we can seek to discover their origin, and then find out whether they have a real purpose in our lives. As a rule, when we scrutinize our conflicts and emotions in a spirit of objective, scientific inquiry, the tensions are resolved. In general, it is those mental processes which we do not fully understand that disorganize us. By consciously facing all the facts in the situation, we are able to work out a better technique for self-control. Of course, there is some danger that we may become too much occupied with self-analysis. We should never lose sight of the fact that self-knowledge must be used to help us make a more satisfactory adjustment to life around us.

Emotional maladjustments are infinitely varied, and no two cases are ever alike. Textbook descriptions of conflicts

and emotional disorganization never fit individual cases. There are no simple panaceas, and there is no royal road to mental health. In some instances, people are able to analyze their own maladjustments and to develop wholesome habits of adjustment. In many instances, however, the individual with a warped personality requires the services of a wise clergyman or a psychiatrist in reorganizing his style of life. One of the best ways to combat unwholesome tensions is to keep busy in a worthwhile task.

Mood and Temperament

Moods.—A persisting emotional reaction is called a *mood.* During the day our moods undergo many changes. In the morning we may be "grouchy" and disagreeable, but after breakfast we may be easier to get along with and more pleasant. Moods are sometimes affected by the weather.[17] As every teacher knows, on rainy days it is difficult to arouse the class to a lively interest in their studies. The pupils seem to lack even the energy to create simple classroom disturbances. On days when the sky is overcast many of us feel dejected and gloomy. Bright, sunny weather, however, raises our emotional tone, and we feel happy. Hot weather, nevertheless, makes us apathetic, ambitionless, and quick to anger. Studies indicate that murders and other crimes of violence occur more frequently in hot countries than in the temperate zone. Fall and spring have a stimulating effect upon our moods. One investigator found that bank clerks made the fewest errors in April, May, and September, even though business picked up during those months.[18]

Moods are closely related to the functioning of the endocrine glands, though the exact relationship is not fully understood. Some people have "April weather" moods; they pass rapidly from elation to dejection. Other individuals, on the contrary, are distinguished by the relative stability of their moods. Some we can count upon to be gloomy and pessimistic; others, to be joyful and optimistic. It may be that they have learned how to conceal their real moods.

[17] See Ellsworth Huntington, *Climate and Civilization* (Yale University Press, 1922).

[18] E. G. Dexter, *Weather Influences* (Macmillan, 1914).

Possibly, however, their internal chemistry is favorable to the maintenance of a given type of emotional behavior.

There is also a close relation between moods and diet. For instance, one person was always thrown into a condition of extreme dejection after a spaghetti dinner. An adequate amount of physical exercise, a refreshing sleep, and a wholesome diet are favorable conditions for an optimistic, joyful mood. No clinical investigations or scientific experiments have yet been performed to establish the connection between physical health and wholesome moods. Daily life, however, supplies a great deal of evidence to warrant this inference.

Some writers have expounded the notion that the elated moods are attempts to escape from reality.[19] If we really faced life, they point out, we should be gloomy and dejected. No experimental studies offer any support to this theory, but it has many adherents. They tell us that the hyperactive, elated individual is striving to escape from his mental conflicts. Thus, the town drunkard may be a "hail-fellow-well-met," full of jokes, ready to treat all-comers, and highly elated. According to this theory, his happy mood is adopted as a defense against the realization of his actual situation. Although this may be a plausible theory, there is no scientific, experimental evidence to support it.

With a little self-examination we can make a chart of our own moods, and thus predict fairly well what our predominant mood will be a few hours or days hence. We may be able to distinguish several degrees of elation and depression. For instance, it is rather easy to differentiate among mild optimism, elation, and *euphoria* (an unfounded feeling of great joy); and among simple pessimism, dejection, and great despair. We might find that these alternations are correlated with our health regimen, with our daily experiences, or with our trends of thinking. In mild optimism we feel a great zest for life, and we welcome opportunities to put forth our best efforts to overcome obstacles. Sometimes, however, these feelings get out of control, and we feel elated without

[19] See William James, *The Varieties of Religious Experience* (Longmans, Green, 1902), Lectures VI and VII.

Tolstoy's *My Confession* is an unusual autobiographical account of the possibility that melancholia may be the realistic attitude, and elation the attitude of one who refuses to face reality.

good reason. Likewise, a pessimistic mood predisposes us to admit defeat even before we commence a task; and occasionally we may be thrown into a fit of deep and unwarranted dejection. These extremes of mood may indicate that there is a health problem which needs immediate attention. In some instances, they indicate mental disorders that require the services of a psychiatrist.

Temperament.[20]—The total effect of all the biological functions upon human behavior is *temperament*. According to the ancients there are four basic types of temperament: sanguine, melancholic, phlegmatic, and choleric. These conditions were thought to be related to the four "humors" of the body. An excess of blood was supposed to make an individual happy and elated (the sanguine temperament). A superabundance of yellow bile was considered to make one quick to anger and highly emotional (the choleric), whereas an excess of black bile is the explanation for the pessimistic, dejected person (the melancholic). The phlegmatic individual, who is unemotional and slow to respond, was thought to have an excess of phlegm. When the mediæval anatomists discovered the existence of cerebrospinal fluid, they added a fifth temperament—the nervous—supposedly resulting from too much of this substance. Although these terms have survived in popular speech, the old doctrine of "bodily humors" has long since been exploded.

These old classifications do contain a germ of truth, however, for it is definitely known that internal chemistry has a great effect upon the personality. This effect is what we refer to as temperament. Now it is known that the metabolic processes and the endocrine secretions are the basic factors in the determination of temperament. These factors affect our health and the efficiency of the nervous system. It is a well-established fact that various drugs which alter the chemistry of the body produce a great effect upon an individual's behavior. It is also known that prolonged mental conflicts and emotional tensions alter the bodily chemistry, and hence have an effect upon temperament.

[20] See William H. Sheldon, *The Varieties of Temperament*. New York: Harpers, 1942; and Gordon W. Allport, *Personality*. Boston: Houghton Mifflin, 1937.

Complexes

Definition.—A *complex* is an unusually strong motive associated with a great amount of irrational, purposeless emotional tension. It denotes a group of associated ideas that are emotionally charged. For instance, a phobia for snakes is a common example of a complex. One who has an abnormal fear of snakes may refuse to go on a picnic lest he encounter a snake. Even a harmless garter snake may upset him profoundly. Phobias are a particular class of complexes that were discussed separately because of their importance. In general, a complex has a harmful effect upon our ability to adjust satisfactorily to the demands of everyday life. If a strong motive is associated with a desirable emotion, and if we are able to achieve a satisfactory adjustment, it is best to refer to that condition as a sentiment. For example, the recollection of an occasion when an honor was conferred upon us may serve to inspire us to put forth greater effort to achieve worth-while goals. The diploma, certificate, or pin given at that time may become of great value for us through the years. That is, it may henceforth arouse desirable motives and emotions. A complex, on the other hand, has a disruptive, undesirable effect upon behavior.

The inferiority complex.—One of the most common of all complexes is the inferiority feeling. It is marked by the following symptoms: a spirit of defeatism; morbid sensitivity to criticism, real or fancied; a keen wish to be flattered and to receive favorable attention, especially from superiors; a tendency to belittle other people, and hence to avoid the necessity for making unfavorable self-comparisons; seclusiveness, in order to escape from having to compete with others; and a more or less constant state of great emotional distress. Whereas it may be considered to be a desirable sentiment for us to know our liabilities and shortcomings, the person with an inferiority feeling tends to magnify deficiencies and to overlook his personality assets.

The inferiority feeling may be acquired in either of two ways. First, a child's parents may compare him unfavorably with a neighbor's child. They may belittle all his efforts to succeed, or they may set goals which he is incapable of reach-

ing. In some communities the dominant groups tend to disparage all people of other races, and thereby they inculcate the inferiority feeling. Members of various professional groups who have not fully met the standards are oftentimes disparaged and made to feel inferior by those who have attained full recognition from the accrediting agencies. Secondly, the inferiority feeling may be the result of many unsatisfactory attempts to adjust to various situations. As we have observed, when an individual is confronted by a difficulty, his level of behavior is heightened, and he has a greater amount of energy to put forth in overcoming the obstacle. Should he succeed, he increases his sentiment of self-confidence. If he fails, however, he is less likely to try to overcome another difficulty like it. Finally he begins to give up without trying, and at length he may strive to avoid any situation in which he would have to rely upon his own efforts to succeed. That is the way in which most inferiority complexes have developed.

Clearly, the procedure to use in overcoming this complex is to give the individual a chance to experience the thrill of success. By presenting him with relatively simple problems or tasks at the start, he may eventually be brought to a point where he will have a normal amount of self-confidence. Modern educational philosophy recognizes the importance of giving every child an opportunity to experience success. When it is said that "the golden years for establishing mental health are those of childhood," the reference is to this need for giving the child an opportunity to develop a well-justified feeling of self-confidence through success experiences.

Varied complexes.—Any abnormally strong interest or aversion may be properly termed a *complex* if it is peculiar to a single individual in the group. Many people have trivial aversions and preferences in foods, reading, music, manner of dress, and art. In fact, most of the complexes of the normal individual are exhibited in petty, unimportant aberrations of conduct. Among the things which annoy us we would likely mention the following: dirty finger nails, a bad case of acne, people who chew gum noisily, a singer off key, losing the car keys, breaking a shoe lace, being required to be polite to persons whom we dislike, and people who pry

into our personal affairs.[21] Undoubtedly, each one of us has a list of "pet peeves," and it is possible that some of our own habits might be included in the lists made up by other people.

Now we are led to a discussion of consciousness, will, and mind. What is it that is conscious of experiencing motives and emotions? How far can we go in controlling our physiological functions by "will power"? We all know that hunger is an insistent physiological drive, but why is it possible that some individuals have gone on hunger strikes? In the succeeding chapter we shall discuss a number of these knotty problems which have perplexed thoughtful people through the ages. Needless to say, we shall not find a solution to these problems, but we must face many of them if we are to get a better understanding of human nature.

QUESTIONS AND EXERCISES

1. Make a list of all the emotions which you experience during the next few days. Describe in detail the situations which aroused each emotion and tell whether or not the emotion helped you to make a better adjustment.
2. What emotions do patients commonly experience? What experiences provoke these emotions?
3. Analyze a state of terror, pointing out all the changes that take place in a terrified person. Can you think of any purpose that might be served by this emotion? Is it true that strong emotion is a disorganized response? Explain.
4. What changes do you see in the appearance of a patient who is terrified by an impending operation, or by the possible diagnosis of a dreaded disease?
5. What techniques can you suggest for "keeping our heads"? How successful are we in controlling strong emotions?
6. What emotions would you include if you were making a list of "dependable human emotions"? What ones seem to be inherited, and what ones are learned? What ones are especially desirable for nurses to possess? Explain.
7. Give some examples to show that frustrating situations vary with the culture of the group. Which group might feel frustration the more keenly, a primitive society or a complex, industrial society? Explain the reason for your answer.

[21] See H. Cason, "Common Annoyances," *Psychological Monographs*, XL (1930), No. 182.

8. Can we learn to have a high frustration tolerance? How? Can we learn to become disorganized by trivial obstacles? Is this type of behavior learned, or is it a failure to learn how to control strong emotion? Explain. Why is this latter type of behavior detrimental to nursing efficiency?
9. Why are sick people likely to have a low frustration tolerance? Can children learn that there are some advantages in being ill? How would you deal with a crotchety patient?
10. Make a list of some common phobias. Study the origin of some particular phobia and report on its probable cause. How would you proceed to eradicate a phobia in a patient? Try your technique on one of your own phobias and describe the result.
11. What are some common anxieties of people today? Is it possible to get rid of all anxieties and worries? What effects do anxieties have upon personal efficiency?
12. Keep a record of your own mental conflicts during the next few days. Try to organize the list according to the order of importance or severity of the conflicts. Tell how you were able to resolve an important and a trivial conflict.
13. Give five examples of repression of emotion or motive. Did the repressed tensions find expression in some indirect outlet? How? Which gets people into more difficulties, repression or expression of certain emotions and motives?
14. Keep a chart of your moods for the coming month. Do you find any evidence to show that you can predict your own moods? What factors seem to upset the normal rate of fluctuations?
15. List your "pet peeves" regarding the mannerisms of other people. It might be interesting to get a close friend tell you about some of your habits that annoy others. Are we more likely to be aware of the shortcomings of others than about our own? Why?
16. How can we establish better control over our emotions? Would it be better if we did not have any emotions at all? Explain your answer.

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CHAPTER VII

THE MENTAL PROCESSES: I

The Nature of Consciousness and of Mind

Consciousness.—Mechanistic psychology represents the point of view that an adequate understanding of human physiology would remove all mystery from the study of human behavior. As one writer has said, "The behaviorist finds no evidence for 'mental processes' of any kind." [1] Yet the intrusive fact is that we are aware of our environment; we are conscious of being tired or rested, upset or complacent, ill or well, happy or dejected. We are conscious of being hungry and of the pleasant tastes of various foods. When a patient is put under anæsthesia, he loses consciousness—that is, he no longer notices things, not even the surgeon's knife. After the effects of the anæsthesia have worn off, he becomes conscious of his discomfort or pain. Paradoxically, consciousness is one of the most obvious facts of life, and yet it is the most difficult topic to explain. Certain mechanistic psychologists merely evade the issue by the dogmatic assertion that consciousness cannot be studied scientifically. We know better.

The word *consciousness* is used with a variety of meanings. First, it is employed to refer to our varying degrees of awareness of the environment. When we analyze our own consciousness at any given moment, we probably find that certain parts of the environment are in the sharp focus of consciousness and that many aspects of it seem to lie on the fringe. While you are reading these lines you are probably concentrating upon the printed page before you. This very sentence, therefore, may be now in the focus of your consciousness. Note, however, that you are also more or less

[1] J. B. Watson, *Psychology from the Standpoint of a Behaviorist* (Lippincott, 1924), p. 2.

aware of the temperature of the room, the noise outside, your next engagement, being tired or bored, or your preceding activity before you began this study. These matters lie on the margin of your consciousness, though any of them may suddenly come into clear awareness. In this sense of the word, consciousness is a sort of passive awareness of our environment, including the stimuli which come from without as well as those which come from within us. It has two aspects: a focus of clearest awareness, and a periphery or fringe which forms a sort of background.

Secondly, *consciousness* implies an alertness or anticipation. Let us imagine that while we are reading a murder mystery late at night we hear a faint noise outside the door. We become alert at once, and we get set for immediate action. Not only are we aware of a strange feeling in the pit of the stomach, but also we are anticipative of danger. We may become conscious of a need to investigate the situation, and at the same time be conscious of an impulse to keep absolutely quiet. Let us now conjecture that, finally summoning up our courage, we open the door and find the house cat outside. All anticipation of danger vanishes, and we are conscious of being chagrined to realize how needlessly we were frightened. The patient in the dental chair becomes alert and apprehensive as he observes the dentist bring the drill down from its hook. He grasps the arms of the chair, contorts his face, becomes tense, and gets set for an ordeal. Thus, consciousness may mean an anticipatory set for the next event in the environment.

Thirdly, the definition of consciousness is widened to include the activity of giving a meaning to the environment. We are not only aware of the situation and set to respond to it, but also we are able to organize the various parts into a meaningful relationship. Intelligence, maturity, and past experience contribute to the richness of meaning which we can bring to bear upon a situation. Thus, a pain, which might cause a layman to take a nostrum, might be an important diagnostic sign for a physician. A foreigner learning the English language has to acquire a mastery of a new set of words before he can get any meaning out of our speech. Before he has learned English, our talk may sound meaning-

less to him. The trained histologist and the beginning student may look at the same bit of tissue under the microscope, but their conscious responses to it differ widely. For the histologist the tissue has some definite meanings; he can tell from what part of the body it came and whether it is diseased or normal. The student has to gain this understanding through long, hard study.

In this connection there is still a great deal of mystery about the nature of consciousness. Philosophers have advanced many different explanations, none of them satisfactory. From all this mass of conflicting opinions the student can get little of real value. About the only safe conclusion to infer is that consciousness is an activity or characteristic feature of many responses. It is an obvious and intrusive fact in human experience. For instance, the physicist may preoccupy himself with a study of the electromagnetic waves of the spectrum. As an experimental physicist he is concerned with such problems as the measurement of light waves and the determination of their characteristics. The physiologist is occupied with a study of how the waves affect the retinas and set up nervous impulses. Such investigations are objective and scientific in a very real sense. The fact remains, however, that some light waves make up the visible section of the spectrum. That is, they arouse conscious responses; and we are aware of meaningful differences among such colors as red, orange, yellow, green, blue-green, and violet. In our study of the inorganic sciences this problem does not trouble us, but in a study of psychology we constantly encounter a difficulty in reconciling man's conscious interpretations of the world around him with what we know about the nature of the universe.

Fourthly, still a further difficulty presents itself to the student of psychology, for we are self-conscious beings. We not only give a subjective interpretation to the world, but also we are aware of the fact that we are sentient beings. When there is no disharmony between ourselves and the environment, there seems to be a minimum of consciousness about routine adjustments. The skilled motorist can drive his car almost like an automaton, making the elaborate movements involved in shifting gears and guiding its prog-

ress with little conscious attention. Let something go wrong, however, and he is at once alert and anticipative of whatever may occur. After the danger has passed, he may reflect upon the characteristics of his responses to that situation; he may analyze this behavior in order to see whether he can subsequently profit by the experience. In daily life there are many occasions when we have to evaluate our habits and to determine upon improved courses of action. Thus, there is a self-consciousness, which seems to be a sort of awareness of the capacity for being conscious. When we "take stock of ourselves," we utilize this ability to make a survey of all our assets and liabilities. Figuratively, we can stand aside and look ourselves over. We are aware of the fact that we have had many experiences in the past, that we now live in an intricate world of interrelated persons, and that a future lies before us. We are conscious of being persons when we reflect upon our position in the group, upon how we want to improve our status, and upon the effect we produce on other people.

In short, consciousness is a difficult matter to explain. There are varying degrees of awareness or sensitivity to the environment. When we are fully alert, like the sprinter on the mark, we have the clearest consciousness of the situation. When we perform routine acts, like putting on our clothes in the morning, there may be a minimum of conscious anticipation of the sequential acts in the procedure. We learn about the nature of sound waves in our study of physics and about the structure and physiology of the auditory apparatus in our course on physiology, but neither physics nor physiology explains why we hear noises and tones. These are subjective responses made by a conscious, living individual. Finally, we are conscious that we have a personality and that we can subject ourselves to self-analysis. Is it any wonder, then, that the psychologist is willing to hand this problem to the philosopher? As students of psychology we must accept consciousness as a fact; as amateur philosophers we may speculate about the nature of consciousness. Our conclusions will probably be as good as those which have been expounded by the rank and file of students of philosophy and psychology.

Mind.[2]—Note that science began with the study of astronomy; for, as one writer has pointed out, the study of nearest things is most difficult. There is much more agreement about the laws of astronomy than about the laws of the human mind. In fact, most psychologists would agree with the statement that we do not yet have any "laws of the mind." The phenomena of astronomy are relatively simple topics for study as compared to the behavior of human beings. Although our knowledge of the human mind is still meager, there has been no end of speculation on the topic. Every philosopher has dealt with the problem, and no two of them have presented similar opinions. Thus we learn two important facts: first, that knowledge becomes uncertain and difficult as it deals with complex phenomena, such as consciousness and mind; and second, that theorizing does not shed any light upon the nature of mind and its functions.

Nevertheless, there is some value in considering one theory which is commonly held. Technically known as *interactionism,* it is the point of view that there is an essential difference between body and mind and that the one influences the behavior of the other. It assumes that one set of laws holds true in the physical world, and that the mind conforms to a wholly different set of principles. In other words, the body is supposed to be composed of inert matter which, in some mysterious way, is controlled by mind; and yet this material substance may exert a profound influence upon the immaterial mind. Although popular speech is full of terms which imply acceptance of this doctrine, it does not stand up under careful study.

In the first place, it assumes that mind is a sort of stuff or substance, different from matter, to be sure, but with an existence apart from body. Therefore, it leads to erroneous and figurative inferences regarding the existence of a "conscious mind" and an "unconscious mind." Some writers have gone so far as to draw a map which supposedly indicates the relationships between the "conscious" and the "uncon-

[2] For a simple reference on the body-mind problem, see G. T. W. Patrick, *What Is the Mind?* (Macmillan, 1929). Three physicians have written their answer to this age-old problem: Foster Kennedy, Angus Frantz, and C. C. Hare, *Inter-relationship of Mind and Body* (Williams and Wilkins, 1939). The body-mind controversy is the central theme in the history of philosophy.

scious." In the second place, it involves a great many unwarranted assumptions about the difference between "mind" and "body." It would be just as logical to assume that digestion, respiration, or circulation have an existence apart from the anatomy and physiology of the body as to assume that mind and body are separate. In other words, it is an artificial and philosophical problem, and not a real issue. The apple tree bears fruit, but we do not, therefore, have an apple-tree dualism; and we breathe with the respiratory apparatus, but there is not a dualism between these organs and respiration. Let us assume, therefore, that mind is a function of the body and that it does not exist apart from the body.[3] From the standpoint of scientific psychology it is preferable to define *mind* as a function of the body. That statement does not imply an acceptance of the philosophy of dogmatic materialism, however, for the word *soul* may be used to include the various aspects of personality which do not fall within the scope of scientific investigation. Body and mind, then, are but two aspects of the living, dynamic, adjusting, personality.

Psychology has little patience with mere theorizing and speculation. As students of psychology, therefore, we approach this problem from an altogether different point of view than that of the philosopher. We start out by making the minimum number of assumptions and by observing the development of any given function which we are studying. If, for instance, we were now engaged in a study of comparative psychology, we would investigate the behavior of lower animals in order to find out how far down the scale an organism can adjust its behavior appropriately to external stimulation. We would then trace the emergence of the more complex types of adjustive behavior, and try to relate the growing complexity of responses to the development of a more complex nervous system. As students of human psychology we do not have time for that inquiry now; hence we take as our starting point the first responses of the infant.

[3] Mind may connote a different meaning for the philosopher and theologian.

Note: Students are urged to consult standard textbooks in philosophy and psychology for definitions of mind.

The Beginnings of Mental Activity

Original nature.[4]—Much has been written about the "original nature" of man. There is a fallacious tendency to separate the "original nature" from man's "acquired nature." Like the body-mind problem of the philosophers, this is an artificial, classroom problem, not a real one. The original nature so-called is an impetus to live.[5] To live means to be active, to adjust to the situation, to strive for the maintenance or the restoration of the optimum balance. It also means to grow and to learn. In other words, it is an error to think of a static "original nature" modified by "forces." The original nature of man is the life process itself. As we have seen, the newborn infant (neonate) is a dynamic organism with a drive to maintain or regain the optimum physiological balance. Under normal conditions the infant slowly matures in an anatomical and a physiological manner. At the same time, the infant has the capacity to acquire intricate modifications of the basic physiological drives, and thus to grow in experience as well. This impetus —to respond in an adjustive manner, to grow physically and through experience, and to profit by past experience—is all that may safely be termed the original nature of man. Thus, the life process itself is the zero point in psychology.[6]

The mind of the infant.[7]—At the time of birth the infant has a number of specific responses to its environment. Respiration, swallowing, elimination, and sucking are a few examples of response patterns which have already developed into specific reflexes by the time of birth. To many forms of sensory stimulation the infant makes diffuse, uncoördi-

[4] For a comprehensive review of many studies which have attempted to separate original nature from learned behavior, see G. C. Schwesinger, *Heredity and Environment* (Macmillan, 1933).

[5] In this connection, read L. F. Shaffer, *The Psychology of Adjustment* (Houghton Mifflin, 1936), pp. 22-40.

[6] For a complete introduction to the study of the zero point in behavior, read L. A. Carmichael, "The Experimental Embryology of Mind," *Psychological Bulletin*, XXXVIII (1941), No. 1, 1-28. For a brief introduction to the zero point in human behavior, see A. T. Jersild, *Child Psychology* (Prentice-Hall, 1940), chap. i.

[7] By all means read A. L. Gesell and Helen Thompson, *Infant Behavior* (McGraw-Hill, 1934).

nated responses. Thus, during the first days of life the infant's eyes do not follow a moving object together. When a pin is sticking into the infant, there is a "mass response" that does nothing to eliminate the source of pain. Later, however, the various reactions become specialized and purposive. By the end of the sixth month the normal infant begins to make selective responses to various parts of its environment. For example, he now begins to pick up objects by using his thumb in opposition to the fingers, to imitate a few simple sounds, to recognize the members of his family, to make some coördinated crawling movements, and to laugh as he throws toys over the side of his bed.

Three important facts are revealed by simple observational studies of young infants. First, most of the responses of the newborn child are random, diffuse, purposeless movements that accomplish almost nothing in bringing about the maintenance or the restoration of the optimum equilibrium. At the same time, there is evidence that the condition of physiological balance is satisfying and that a disruption of this equilibrium is accompanied by excitement or distress. Secondly, through maturation and exercise the response patterns gradually take on a differentiated, purposeful character. For instance, there is a difference between crying that indicates hunger and that which signifies pain. The infant becomes attentive to specific aspects of its environment and responds differentially to them. Thirdly, the social environment gradually becomes more important than the physiological conditions. Thus, the young child becomes more responsive to people, to language, and to objects which do not satisfy any immediate physiological needs. In other words, the child learns through experience.

Hygiene and development.—The most important factors which will insure the normal development of the infant are those which relate to physical health. It is fortunate, therefore, that modern parents have access to a sound body of knowledge regarding the care and feeding of infants. Diseases and malnutrition may stunt the physical development of the young child, and hence arrest the growth of the mind. Given a normal heredity, the human being can be improved greatly by a program of medical care which is commenced

early, even during the prenatal period, and continued until the attainment of adulthood. There is definite evidence to show that young adults today are taller and heavier than their parents were at a similar age. Whether there has been a corresponding improvement in mental development is a debatable matter.

At least, the modern parent has access to a great deal of useful information regarding the proper way to guide the mental growth of children. One of the most important developments within the past few decades has been the growth of knowledge about mental hygiene and child education. Realizing the great importance of the early years of life in the development of a wholesome personality, psychiatrists and educators have given an increasing amount of emphasis to research investigations on child guidance. Frequently, nurses are asked to recommend books to parents who are desirous of applying some of this new knowledge in bringing up their own children.[8] In the modern progressive school there is a purposeful attempt to apply these new understandings and thus to improve over the old procedures in education. Although it is still too early to say the final word about the results, there is evidence to show that mental hygiene is accomplishing fully as much as physical hygiene in child care and education.

Attention

Adaptive behavior.—We have seen that the infant's first responses are diffuse mass reactions and that through physical and mental development these responses become more and more adjustive to the exigencies of a particular situation. In other words, the young child learns how to select the meaningful aspects of the environment and to adapt its behavior in order to secure or to maintain the most satisfactory state of affairs. This purposeful selection of detailed

[8] Among the books that can be highly recommended are the following: M. L. Feagre and J. E. Anderson, *Child Care and Training* (4th ed.) (University of Minnesota Press, 1937). D. A. Thom, *Everyday Problems of the Everyday Child* (Appleton-Century, 1927). E. J. Partridge, *Baby's Point of View* (New York: Oxford University Press, 1937). The bulletins of the Children's Bureau, United States Department of Labor, are inexpensive and practical for most parents.

portions of the environment is called attention. Of course, attention is really an activity; it is a manner of responding to the differential aspects of a total situation. When we "pay attention," we place ourselves in a certain set to respond to definite aspects of the environment. Conversely, adaptive behavior is that in which we select the appropriate phases of the environment to which to respond. In nonadaptive behavior our responses do not bring a satisfactory adjustment, for we do not attend selectively to the situation confronting us.

Attention and motive.—Some activities bring the satisfaction of drives or motives; hence they have priority in our attention. The hungry person is attentive to the odors of dinner cooking on the stove; the thirsty individual is attentive to the dryness of the mouth; and one who is cold is attentive to bodily discomfort. Attention, then, is a characteristic of motive. It is the anticipatory response to eliminate the tension. Both the physiological drives and the social motives get our attention when our equilibrium is upset. Thus, if we are dissatisfied with the old car, we may be attentive to the displays of new models on "automobile row." When the motive has been satisfied, it no longer has our attention; and other tensions arise to take its place.

The motor set.—When the individual takes a set that will bring about the restoration of balance, that set is called the act of attending. In class the student takes a definite motor set in order to hear the words of the instructor. So conventionalized has this pattern become, that some students, preferring to attend to their own daydreams, have learned how to feign the set of close attention. Eyes fixed upon the teacher, body bent slightly forward, face somewhat tense—these are a few of the signs which encourage the lecturer to believe that his class is attentive. Within the body of the attentive person there is a heightened tension. Respiratory and circulatory reactions may be increased, and the skeletal muscles may be tensed as if ready for action. Observe the batter standing at the plate, the runner on the mark, or a person awaiting the coming of the postman. Clearly, attention involves a motor set which will facilitate the response to a situation.

The subjective aspect of attention.—Introspectively considered, attention is a condition of clear awareness of something. Many physiological activities are carried on without any awareness on our part. When disorders arise, however, we become acutely conscious of that fact. Other types of adaptive behavior go on with a minimum of attention. Thus a skilled dancer does not need to pay attention to the intricate steps of a dance routine, but may attend to the impression she is making upon the audience. Within the field of our conscious attention at any given moment, we find two aspects: first, there is a center or focus of clearest awareness; and secondly, there is an outer fringe or margin of lesser clearness. In other words, our selection of certain aspects of the situation is not absolute, but it is relative. We are vaguely aware of a great many features of the total situation at the same time that we become set to respond selectively to those which are meaningful for us.

"Unconscious" behavior, then, consists of those adaptive responses which do not intrude into the field of attention.[9] Skilled acts, such as typewriting or signing our names, require no attentive direction; they are performed automatically. In a sense, therefore, these activities might be called "unconscious." Preferably, however, this term should be used with caution, since a number of theorists have upheld the notion that there is an "unconscious mind." Whether they believe that the "unconscious" is a figure of speech, a characteristic of the attending processes, an entity, or a convenient hypothesis is not clearly brought out in the innumerable discussions of this topic. From the standpoint of scientific psychology this is an unnecessary assumption. The only point which is at all significant to note is that there are relative degrees of attention, ranging from no awareness whatsoever through full and complete consciousness.

Sensation and Perception

Sensation.—The immediate and most elemental conscious response to a situation is called sensation. Odors, tastes, colors, aches and pains, sounds, and warmth or cold are a

[9] Obviously, *unconsciousness*, the loss of consciousness due to disease, injury, sleep, or coma, is quite another matter.

few examples of experiences which are known as sensations. Seldom do normal adults experience any pure sensations, since our past experiences causes us to interpret the stimulus. Theoretically, a pure sensation involves no interpretation. The first ride in an airplane, a bolt of lightning, an exotic and unfamiliar food, or an intense pain are examples of adult experiences which approximate pure sensations. The newborn infant and the lowest grade of idiot would experience nothing but pure sensations.

A great deal of research work has been devoted to building up a catalogue of the various primary sensations, and to the determination of the relationship between these responses and the physiology of the sense organs. As a result of these investigations a large body of factual knowledge has been accumulated, some of which we shall now briefly review.

Visual sensations.—The normal stimulus for visual sensations is light waves varying in length between 760 mμ (millionths of a millimeter) to 390 mμ. The relation between our conscious response and the lengths of the light waves is as follows:

Sensation	*Wave Lengths (mμ)*
Red	647-760
Orange	588-647
Yellow	550-588
Green	492-550
Blue	433-492
Violet	390-433

Of course, we seldom are stimulated by light waves all of the same length. For instance, sunlight is a complex of all parts of the spectral band, and we have no color sensation of it. Greens, reds, and other hues are difficult to match because they contain varying degrees of wave mixtures. A color with pure light waves of any given length is said to be completely saturated. Brilliance of colors depends upon the length and the intensity of the light waves. Thus, colors in the middle of the spectrum seem to be brightest, and those towards the red and the violet ends darkest.

Among the special phenomena of color vision there are three which can be mentioned in this brief discussion. First,

by combining two or more of six disks on a color wheel it is possible to create thousands of different color sensations. The usual procedure is to have cardboard disks which can be interlapped and rotated at least fifty or sixty revolutions a second, the disks being as follows: white, black, red, blue-green, yellow, and blue. Some pairs tend to cancel each other, and others fuse to produce various hues, tints, and shades. Second, if one looks at a small square of red on a neutral gray background for thirty or forty seconds, and then removes the red, a curious effect called the negative afterimage will appear. There will seem to be a greenish square. This effect can, of course, be produced by using other colors. Third, some people are insensitive to certain differences in colors, and hence are said to be color-blind. The most common types of color blindness are exhibited by inabilities to differentiate reds and greens. Thus a color-blind man was unable to tell when his strawberries were ripe. Various tests have been devised to detect specific color disabilities, which occur much more frequently among men than among women.

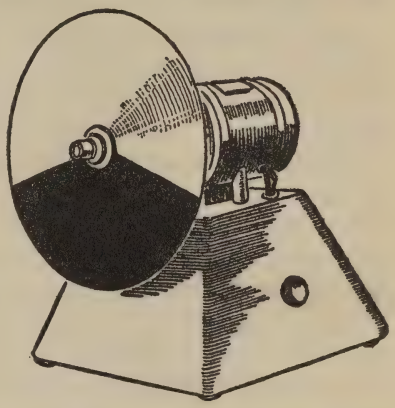


FIG. 39.—A COLOR MIXER. Interlapped disks are rotated on this device to produce blends and cancellations. Red and yellow, for example, blend to produce orange; whereas blue and yellow, mixed in the right amounts, cancel each other to make a grayish hue. By adding various amounts of a black disk, it is possible to produce shades; and by using the white disk, to make the tints. Thousands of different hues, tints, and shades can be produced through the use of various combinations of six saturated hues: red, blue, yellow, green, white, and black.

Auditory sensations.—The stimulus for auditory sensations is sound waves between twenty and twenty thousand vibrations a second. In some cases people can respond to waves as low as sixteen vibrations and as high as thirty thousand. Various forms of physical energy, such as sound waves

of fifty thousand vibrations or light waves below 390 mμ, are said to lie outside the threshold of attention because they produce no conscious response. Auditory sensations may be roughly classified as tones and noises, though this is a subjective distinction. Jazz music may be mere noise to the grandparents but beautiful tones to Junior. Ability to respond to differences in the frequency of sound waves is known as the sense of pitch; to differences in amplitude, as the sense of intensity or loudness; and to differences in the composition of the sound wave, as the sense of timbre. As everyone has observed, middle C differs from one musical instrument to another; it does not sound at all alike when it is played on a wood wind, a brass, or a string instrument. The explanation is that the composition of the sound wave differs because there are accompanying sound waves (overtones) along with the basal wave (the fundamental). It is difficult to relate our auditory sensations to precise physical factors, since habituation plays a large part in determining our responses. To a large extent we can become habituated to detect very slight differences in pitch, intensity, and timbre. Some people, however, seem to have disabilities that cannot be overcome by training; hence they are said to be tone deaf.

The sense of smell.—Gaseous substances which affect the olfactory membranes (located in the upper part of the nostril) are the stimuli for the sense of smell. A considerable amount of work has been done to locate the pure olfactory qualities; but, owing to the fact that the sense of smell becomes fatigued rather quickly, the results are still unsatisfactory. The nurse has had occasion to observe how quickly one begins to lose sensitivity to the horrible smells of an anatomy laboratory. Within five or ten minutes the stench of the Fulton Fish Market is no longer noticeable to the visitor. This characteristic, known as sensory adaptation, is quite pronounced in the sense of smell, and it makes experimental studies difficult to undertake. The following list of pure olfactory sensations has been rather generally agreed upon:

Fragrant (lilac, heliotrope, rose, etc.)
Putrid (stale cheese, hydrogen sulphide, etc.)

Spicy (cinnamon, anise, etc.)
Ethereal (ether, lemon, etc.)
Burned (scorched cloth, tar, etc.)
Balsamic (resin, pine forests, etc.)

The sense of taste.—The primary taste sensations are sweet, sour, bitter, and salty. Taste is a chemical sense, in that a substance in solution has to stimulate the taste buds to create a sensation. The chemistry of taste is still imperfectly worked out, but it is clear that taste is a rather simple type of sense. Contributing to what we commonly refer to as "tastes" are many other sensations, such as odors, temperature, appearance of the food, degree of hunger, and pressures on the tongue and mouth. When we are hungry, food that smells good "hits the spot." Sick people are difficult to please about their meals, not so much because the sense of taste is lost, but because little attention has been given to making the food tray look attractive, having the foods at the proper temperatures, and seasoning them to create pleasant odors.

Cutaneous sensations.—Located in the skin are various sense organs giving rise to sensations of warmth, cold, touch, and pain when properly stimulated. In some areas these sense organs are more numerous than in others. For instance, a small boy occupying a front seat in a classroom used to push a needle through his cheek, in which he had discovered a small area insensitive to pain. Since touch spots are numerous on the lips, the infant explores his environment by putting all sorts of objects into his mouth. Touch spots are much more numerous on the finger tips than on the back of the hand. A curious fact about the sense of cold is that an intensely cold object, like a block of ice being carried from the car to the refrigerator, seems to be hot. This subjective reversal is known as paradoxical warmth. The sense of warmth becomes quickly adapted to the source of stimulation; hence it is necessary for the nurse to keep a close watch on the temperature in giving hydrotherapy. Apparently, the sense of heat is a fusion of warmth, cold, and pain. Fusions of various cutaneous sensations give rise to experiences like clamminess (pressure and cold) or sharpness (pain

and pressure). As yet, it is not clear whether each cutaneous sense has a specific sensory nerve ending or receptor; but there is no doubt about the existence of the four basic patterns of response to cutaneous stimulation.

Equilibrium and kinæsthetic sensations.—The sense of equilibrium is analyzable into a number of specific responses. The most important source of stimulation is any change in the position of the head, the principal sense organs being the semi-circular canals of the inner ear. When the patient is tested for this sensitivity, he is placed in a chair and rotated several times, on each test the head being held in a different plane. The sense of touch also plays a great part in determining our equilibrium, since we get sensations from the feet. In daily life we are also dependent upon the sense of sight in maintaining our balance. Contributing to our sense of balance are many complex impressions received from muscles, tendons, and joints. Awareness of postural changes in the body is called the kinæsthetic sense. Skilled performers, like a tight-rope walker or a pole vaulter, have learned to become very sensitive to slight cues from a complex pattern of stimuli originating particularly in the kinæsthetic receptors. When the nerve fibers involved in this sense are disordered a condition known as locomotor ataxia occurs. The patient is unsteady in all his movements and has extreme difficulty in walking. Attacks of vertigo, nausea, and dizziness arise from a complex pattern of stimuli which upset the normal postural adjustments of the patient.

Organic sensations.—Sense organs (known as *interoceptors*) are located in the surfaces and linings of various organs, and they give rise to organic sensations. As a rule, these sensations are not located in any definite place, but they seem to be diffuse and generalized. The vague pattern of organic sensations furnishes a sort of background for our consciousness. If we are healthy, we tend to be agreeable, patient, and cheerful; but if we suffer from indigestion, we may become depressed, irritable, and querulous. This broad pattern of organic sensations is sometimes referred to as the coenaesthetic sense.

Sensory patterns.—Outside the psychological laboratory we seldom experience any pure sensation. Sights, sounds,

odors, cutaneous responses, tastes, and organic sensitivities fuse and blend into intricate patterns of experience. To many separate parts of these patterns we pay little attention, whereas others may be in the clear focus of consciousness. Even an introductory study of physics and physiology shows us how inadequate would our understanding of reality be if we relied entirely upon these conscious responses to our environment. Most of us know that it is difficult to determine the exact source of a pain or to

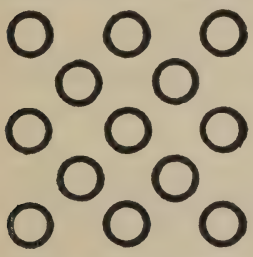


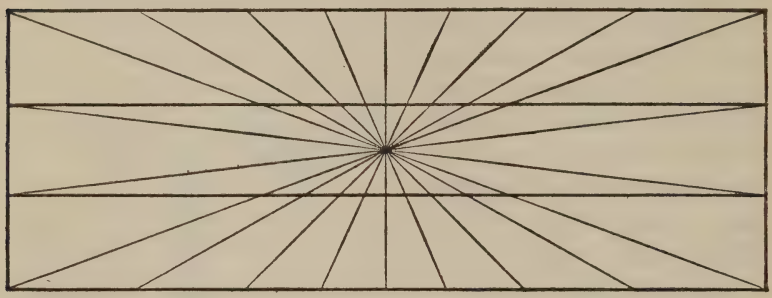
FIG. 40.—A CIRCLE FIGURE. Look steadily at these small circles. Into how many different patterns do they seem to arrange themselves? From E. C. Sanford, *Experimental Psychology* (1898).

FIG. 41.—NOTE THE EFFECT OF THE TOTAL SITUATION UPON OUR PERCEPTION. COVER UP THE HAND. NOW COVER UP THE MAN. WHY DOES THE FISH LOOK DIFFERENT?

analyze precisely the pattern of organic sensations of a given moment. As we have noted, pure taste sensations contribute little to our pleasure in eating a good meal. Reflection upon this discussion will show us that "pure sensations" are little more than hypothetical abstractions.

Perception.—Through past experiences we have learned to organize sensory patterns into meaningful relationships. Even when a relatively isolated sensation occurs, we give it a characteristic interpretation. Thus, we designate color sensations, odors, tastes, and many other sensory reactions by appropriate names, such as *yellow, flowery, bitter, sharp,* and so on. We organize a pattern of tones into melody and

harmony. On looking out the window, we find that the landscape seems to have an organization or pattern of foreground and background. The act of perceiving is the apprehending of these meaningful relationships among the parts of our environment.



Hering Illusion

Zöllner Illusion

FIG. 42.—MANY OF THE COMMON OPTICAL ILLUSIONS ARE NAMED FOR THEIR DISCOVERERS. ARE ALL THESE HORIZONTAL LINES EXACTLY PARALLEL? USE A RULER. WHY DO THEY APPEAR DIFFERENT? HOW DO THE HERING AND THE ZÖLLNER ILLUSIONS DIFFER?

For accuracy of perception we are dependent upon our sense organs, our past experiences, mental set, and intelligence. Many errors in perceiving are matters of daily experience. These relatively simple mistakes, called *illusions,* occur most frequently in visual experience, although they

also are encountered in other senses. For instance, if a subject is blindfolded and asked to point out exactly where a click was made in the medial plane, he will make large errors in locating the source of the sounds. If, however, the clicks are made to the right or the left of his head, he will make no mistakes in perception. Some optical illusions are

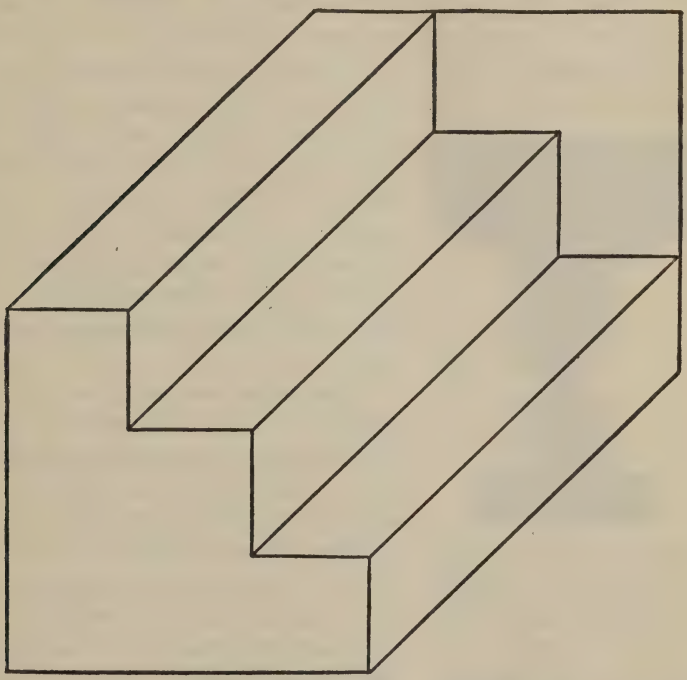


FIG. 43.—DO YOU SEE A THREE-DIMENSION FIGURE HERE? CAN YOU SEE A STAIRCASE AS YOU LOOK DOWN FROM ABOVE? CAN YOU SEE THE UNDERSIDE OF THE STAIRCASE? KEEP LOOKING UNTIL THE PERCEPTUAL PATTERN ALTERS FROM ONE TO THE OTHER.

caused by the patterns of stimuli; a few examples are shown in Figure 42. Others are related to the physiology of the eyes. Thus, if an inch-square piece of gray paper is placed in the center of a blue sheet six or eight inches square, and then if a piece of thin tissue is placed over the whole in order to blur the colors somewhat, the gray takes on a yellowish hue. This effect is due to the action of the light waves on the retinas.

Illusions based upon mental sets are more complex. One evening a patient in a state of high fever observed the shadows on the window, but she believed that the devil was outside looking in at her. Therefore she jumped out of bed and drove her fist through the glass. You will recall that young Samuel, thinking that he heard the voice of Eli calling him in the night, got up three times to go to the old priest. Presumably, Samuel was giving serious thought to the matter of becoming a priest, and hence he misinterpreted some noises as a voice calling him. Stage magicians are adept in producing mental sets which are conducive to the tricks which they perform. Thus, in doing a disappearing-coin trick, the magician creates a definite set of expectation on the part of his audience, who then "see" the coin vanish in thin air.

FIG. 44.—CAN YOU SEE THE VASE? NOW LET THE WHITE PART OF THE PAGE BE THE FOREGROUND AND THE BLACK PORTION BECOME THE BACKGROUND. WHAT DO YOU SEE? From E. Rubin.

Oftentimes we perceive the appropriate relationships with great suddenness. Newspapers sometimes print hidden-picture puzzles in which we suddenly perceive various figures. During high school days we have been perplexed by an algebra equation, and then all of a sudden we "got the idea" for solving it. This experience of "catching on" is an everyday phenomenon in perception. We are all familiar with the humorless individual who has to have a joke repeated or explained before he can perceive the point of it. A matter-of-fact young woman added a great deal of fun to her group because she would commence to laugh uproariously five or ten minutes after a joke had been told and the others had directed their attention elsewhere.

A few simple experiments will reveal the fact that perceptions shift from one pattern to another. Although the stimulus pattern remains the same, our perception of it alters. New meanings and organizations are brought to bear

upon the situation. For instance, look at the black vase in Figure 44. Now look at the two faces in the figure. Observe how the cube, in Figure 45, shifts backwards and forwards. Try to hold it in one position. Apparently, we seek to explore the situations and to establish all the meaningful relationships that are possible. Perhaps there hangs on a wall of our homes a picture which we never tire of viewing, for it gains in meaning as we continue to look at it. This, then, is an example of the phenomenon of shifting perception.

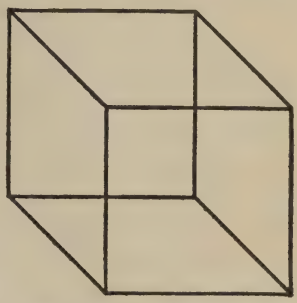


FIG. 45.—OBSERVE HOW THE CUBE SEEMS TO FLUCTUATE. TRY TO HOLD IT IN ONE POSITION.

Common abnormalities of sensing and perceiving.—The processes of sensing and perceiving are of basic importance in determining our responses to the environment. Owing to the complex nature of these activities, they are subject to many disorders, some of which are trivial and others of grave consequence. In the first place, unless our sensory equipment is normal, we may be unable to make appropriate adjustments. Some readers of this book may recall that in grade school they could not see the material on the blackboard until after they had been given glasses, and then the world seemed no longer to be a fuzzy, blurred pattern. Secondly, without appropriate past experiences we are unable to attend to the right aspects of the general situation and to interpret the situation correctly. The physician learns how to recognize various symptoms of heart disorders by listening through the stethoscope or by reading the electrocardiograph records. To the layman these mean little more than a pattern of unrelated sensations. Thirdly, correctness in sensing and perceiving are also related to the health condition of the individual.

Common sensory abnormalities.—Complete inability to respond to sensory stimuli is called *anæsthesia.* Excessive response to stimuli is known as *hyperæsthesia.* In Helen Keller's great book *The Story of My Life* we have an account

of what it means to live without the senses of sight and hearing. Literally, *anæsthesia* means a loss or absence of sensitivity; and it may be due to defective sense organs; to the effects of drugs, such as ether or novocaine; or to functional causes. A small boy who fails to "hear" his father request him to mow the lawn illustrates functional deafness. Hyperæsthesias are common among sick people. They react violently to noises; hence there is a quiet zone around hospitals. In Ben Jonson's play *Epicene* the main character is an old fellow who cannot stand any noise; hence he requires his servants to wear cloth soles on their shoes, and he cautions everyone to keep quiet. Probably you have noticed that when you are fatigued you are hypersensitive to bright lights, to sounds, even to the weight of clothing, and to odors.

Functional anæsthesias are especially interesting to the student of psychology. Most of us have had the experience of looking frantically for some object, such as the car keys or a pen, which lies directly before us. In a highly emotional condition we may not feel pain very keenly or even notice another person in the room. The hysterical patient may exhibit curious insensitivities, particularly in the sense of touch. When our attention is strongly focused upon an absorbing novel, we may not "hear" the telephone or realize that the dinner hour is approaching and that we are hungry. In the mental life of a demented patient there may be many grave anæsthesias of a functional type.

Grossly false sensations are known as *paræsthesias.* For instance, most of us have had the disagreeable sensation of "itching" or "crawling" when tired or unwell, though there is no apparent external cause for this feeling. There are times when nothing tastes right, when everything smells offensive, or when we feel "logy" and out-of-sorts for no discoverable cause. These experiences are known as paræsthesias. Some of them are relatively common, like the sensation of a ringing in the ears; others are complex, like the feeling that everything is unreal and shadowy. As a rule, no particular attention is paid to these false sensations beyond the troublesome fact that they seem to disrupt our efficiency and to be more or less disturbing. Probably they are attributable to temporary disturbances in the rhythm of

physiological functions, and hence they may indicate health problems.

Disorders of perceiving.—Since the perceptual functions are far more complex than the sensory activities, disorders of perceiving are varied and intricate. Each one of us learns to perceive things in a way that is peculiar to ourselves. We build up individual preferences in interests, likes and dislikes, and manner of interpretation. Perceptual disorders may arise from defective sensory equipment, limited experience, or disordered thinking. In the familiar tale of the blind men of Hindustani who tried to find out what an elephant is like by feeling of various parts of it, we have an illustration of imperception based upon a lack of adequate sensations. When we try to decipher a new language, our inability to perceive any meaning in it is due to our lack of experience. A simple example of the relation between disordered thinking and misperception has been given by Pope:

> All seems infected that the infected spy,
> As all looks yellow to the jaundiced eye.
> (*Essay on Criticism*)

Another illustration showing how thinking may influence perception has been given by Shakespeare:

> Suspicion always haunts the guilty mind;
> The thief doth fear each bush an officer.
> (*Henry VI, Part Three*)

The gravest "perceptual" disorders are the hallucinations.[10] In a true *hallucination* there is no situation which seems to be appropriate to induce the perception, and yet the patient responds as though there were a definite pattern of sensory stimulation. Formerly it was the practice to draw a sharp line of distinction between illusions and hallucinations. Thus, an *illusion* was defined as a misperception of a pattern of stimuli present to sense; and an *hallucination* as a perceptual response to the nonexisting sensory pattern. Now, however, more careful studies of hallucinations have

[10] A readable old book, full of illustrations, is A. B. De Boismont, *The Rational History of Hallucinations* (Blakiston, 1853). See E. S. Conklin, *Principles of Abnormal Psychology* (Holt, 1935), chap. iii.

revealed the fact that in many instances there may be a slight sensory element which is egregiously misinterpreted. Thus, the victim of delirium tremens sees "snakes" and "pink elephants." Possibly his hallucinations are attributable in part to the pathological condition of his eyes resulting from the effects of alcohol. The patient who hears a rhythmical voice telling him, "Kill them! Kill them!" may be hypersensitive to the beating of his heart. "Voices" may be accounted for by pathological conditions in the middle or the inner ear or by deteriorative changes in the auditory nerve. One elderly gentleman who is now becoming completely deaf reports that occasionally he "hears" strains of organ music, the incessant ringing of bells, or the rush of strong winds.

Whereas illusions are familiar in everyday experiences, hallucinations are rare in our waking life. Even the normal person may experience a few hallucinations when he is ill or excessively fatigued. A strong mental set may occasionally produce an hallucination. For example, a young man whose mother had recently died "heard" her call him late one night after everyone in the household had retired. The most familiar hallucinatory experiences of the normal person are connected with dreams, which will be discussed in the next chapter. Extreme hallucinations during waking life are likely to indicate a serious mental disorder, possibly schizophrenia. Some patients seem to enjoy their hallucinations; others find them decidedly unpleasant. Schizophrenics often stuff paper or other substances into their ears in the vain attempt to shut out the terrible "voices" or to escape other imaginary sounds.

Now we shall direct our attention to some of the more complex mental processes. As we have observed, sensations and perceptions occur when some form of physical energy affects a sense organ and arouses a conscious response. The immediate response, before the situation is interpreted or organized into a meaningful pattern, is called a sensation. The attachment of meaning and the organizing of the response pattern is called the act of perceiving. In perception the mental processes are far more complex, and no two persons perceive exactly the same thing in most situations.

To understand the reason we must know something about the higher mental functions.

QUESTIONS AND EXERCISES

1. Make a list of all the things of which you are conscious at the present moment. What things are in the focus of consciousness? What are in the margin of consciousness? Can you be sure that your list is correct? Why is it difficult to analyze consciousness?
2. Explain how the young child becomes conscious of the meanings of words and gestures. Give specific examples.
3. Do you believe that the world is a "booming, buzzing confusion of sensations" for the newborn infant? To what stimuli does the newborn infant attend?
4. Are consciousness and mind substances or activities? Is it possible to explain all the facts of consciousness and mind by the physiological or the neurological point of view? Justify your answer.
5. Make a list of the situations which strongly arouse your attention. Give some examples of individual differences in attention. May attention be defined as a "set"? Explain.
6. Under what conditions do adults experience pure sensations? Give some examples. Would our response be on the level of pure sensation if we were listening to Chinese music for the first time? How would you classify the experience of diving into very cold water, as a sensation or a perception? Why?
7. Upon what factors do sensations depend? (Stimuli, sense organs, attention, etc. Explain in detail.) A trite "poser" is the following question: If a tree fell in a forest with no one around, would there be a noise? Why does the answer depend upon our definition of sensation?
8. Give some familiar examples of illusions. How can short people dress in such a way as to add illusory height? How can stout people create the illusion of being slimmer? What use does the architect make of visual illusions?
9. Illusions may depend upon three factors: the stimulus pattern, the nature of the sense organs, and the state of expectation of the person. Give some examples of each type.
10. How much can we depend upon the accuracy of our sense organs in getting a valid knowledge of reality? Give some specific examples to show that our sense organs do not apprehend reality correctly.

11. Compare the discussion of reality (matter, energy, etc.) as presented in a textbook on physics with the way we experience it. Do we *hear* sound waves, *see* light waves, and so on; or do we *hear* tones and noises, *see* colors, and so on? Justify your answer.
12. Can psychology become a natural science, like physics or geology? Can psychology become a science at all? Explain fully. It has been said that the unity of science lies in its method, not in its subject matter. How is that true? What bearing does the statement have upon the preceding question?
13. Do normal people ever experience hallucinations? Are dreams examples of hallucinations? What sensory elements might cause one to dream of walking down the street without shoes and stockings on? How could an illusion based upon a state of expectation develop into an unusual hallucination?
14. Why cannot a physician depend upon the introspections of his patient in making a diagnosis? Give some examples. On the other hand, how can the nurse's accurate charting of the patient's introspections, during the physician's absence, aid him in making a diagnosis?
15. Upon what factors does accurate perception depend? Explain in detail.

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CHAPTER VIII

THE MENTAL PROCESSES: II

Concepts and Meanings

The growth of concepts.—A complex, meaningful interpretation of a situation is called a *concept* or *idea.* For instance, our interpretation of the word *time* is an example of a type of concept called an abstract idea; and the meaning which we give to the word *book* is a general concept. In a way, a concept may be defined as the sum total of all our sensory and perceptual responses to a given situation; it is what the situation means to us. Concepts have their origin in sensory experience, they develop through the act of perceiving, and they finally emerge as abstract meanings. Some examples of the growth of concepts will clarify the discussion.

An investigator [1] presented a number of specimens like those in Figure 46, in a series and asked the subjects to discover the characteristics which they have in common. The subjects were asked to define the essential characteristics of each class, to give some original examples, and to take some additional tests to make certain that the concept had been formed. In some instances the subjects could perform the tests correctly, but they were unable to explain or define their concept. After some practice, however, these vague concepts became clearer, and the subjects were able to make the generalizations. Note that the "dax principle" appears in seven different situations. This is an important aspect of concept development, and it is constantly used in the classroom. If the teacher wishes to develop the concept *ten,* she may give the pupils many experiences with ten children, ten

[1] K. L. Smoke, "An Objective Study of Concept Formation," *Psychological Monograph,* XLII (1932), 4.

books, ten counting sticks, and so on, until the general idea or concept is fully mastered.

Children's amusing remarks often depend upon their imperfectly developed concepts. One day a neighbor child invited the minister's boy to come over and play ball, but the boy declined, saying, "Father doesn't want me to play on

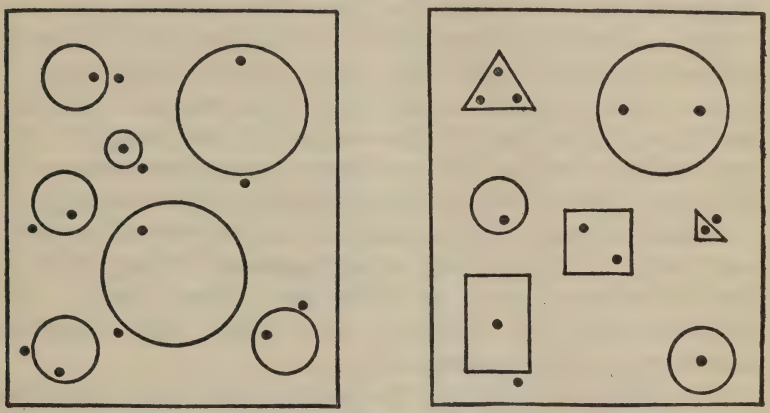

FIG. 46.—AN EXERCISE IN CONCEPT FORMATION. WHAT IS A "DAX"? WHAT IS THE CLASS OF DRAWINGS WHICH IS "NOT DAX"? HOW DID YOU ARRIVE AT THE CONCEPT OF "DAX"? HOW DOES THIS MENTAL ACTIVITY DIFFER FROM THE ACT OF PERCEIVING?

the Sabbath." "Oh," replied the other lad, "it's never the Sabbath in my yard." Obviously, here is an example of an incompletely developed concept. Likewise, the youngster who called his mother's fur gloves *Kitty* made an inadequate generalization about furry things. When high-school teachers give original problems in plane geometry, they discover that most of their pupils have learned the subject by rote memory without forming any real concepts of geometrical relationships. Failure to develop adequate generalizations and to make precise interpretations is a common sign of inadequate, half-developed concepts. You will recall that Socrates incurred the wrath of the Athenians by showing them that their concepts of abstract words were untenable and ambiguous; hence childish and nonsensical.

The normal child at age five will define words like *ball,*

hat, and *stove* in terms of use. A ball is "to play with," "to throw," or "to roll"; a hat is "you put it on," "wear it on your head," "to put on when you go outside"; and a stove is "to cook on," "mother makes food on it." At about age twelve the child begins to define words by simple descriptions. Thus, a brunet is "a person with black hair"; and a juggler is "someone who does tricks like throwing balls up in the air and catching them." Proficiency in defining abstract words develops slowly, and not until age fifteen or sixteen can a person satisfactorily differentiate between words like *laziness* and *idleness* or *poverty* and *misery.*[2] An interesting feature of the concepts of immature persons is that there seems to be no comprehension of the inadequacy of understanding. If, for example, a four-year-old is asked to tell why the clouds move, he may answer, "When we walk along, they move too"; or, "The sun pushes them." Explanations that are obviously inconsistent with observed facts do not trouble youngsters.[3]

The earliest concepts are egocentric—that is, the situation is related to the child. He understands his environment in terms of the way it affects him, meets his needs, and fulfils his wishes. Consequently, his concepts reveal an imperfect understanding of the objective environment; however, they are gratifying because he is the center of the universe. Through many experiences he learns, as he grows older, that various aspects of the environment have a relationship to one another. Through apprehending this relationship he is able to exert a more satisfactory control over various situations; hence he has a felt need or purpose in objectifying his concepts. In the objective concept the various aspects of the environment are related to one another. Hence understanding becomes more impersonal and realistic. Through scientific training the individual learns a vocabulary which enables him to differentiate precisely among specific concepts, and his habits of thinking become clear and accurate.

[2] See L. M. Terman and M. A. Merrill, *Measuring Intelligence* (Houghton Mifflin, 1937). Note particularly the manner in which the child's knowledge of words is measured.

[3] Jean Piaget, *The Child's Conception of Physical Causality* (Harcourt, Brace, 1930). Piaget has conducted extensive researches which show the egocentric nature of the concepts of young children.

The growth of meaning.—All the concepts which we bring to bear upon a given situation constitute the interpretation or meaning it has for us.[4] A deaf mute person once told a story to a child by gestures which had definite meaning. To indicate that the heroine of this tale is a little girl, he held his hand about a yard from the floor, and then went through the motions of tying bonnet strings under his chin. The child's mother entered, this being told by elaborate pantomime, and gave the girl two coins. Here the narrator went through the motions of dropping the two coins from one hand to the other; and, to show that the amount of money was small, he assumed a contemptuous expression. Thus he proceeded to unfold the plot of the narrative to his wide-eyed listener, who clearly understood every gesture. By observing her behavior, he, in turn, was able to understand whether he was making himself clear to her.

Gestures may be obscure or devoid of meaning for those who have not had appropriate experiences to make them comprehensible. For instance, in a school for deaf and mute children the gesture for *French people* was a sharp blow on the back of the neck. When, therefore, a youngster wished to indicate that he was referring to the French, he hit the back of his neck with the side of his hand; and all his associates clearly understood his meaning. The explanation is that these pupils had been greatly impressed by their study of the executions during the French Revolution. To strike the back of the neck, consequently, meant the guillotine, and that, by an extension of meaning, alluded to all French people. Unless a visitor knew something about the origin of this particular gesture, he would be unable to comprehend this gesture. Meanings are based upon past experiences, and there is a tendency for people to use a small element or part of a pattern of former experiences whereby to signify the whole.

The most convenient system of meanings is our language. In an unabridged dictionary there are over a half million words which may be used in speech or writing to convey

[4] Some interesting examples of how gestures acquire meanings may be found in E. B. Tylor, *Anthropology* (Appleton, 1897), chap. iv.

specific meanings to our associates. Words are abstract symbols whose meanings are derived through experience. The very young child learns that certain sounds bring an adult who attends to the satisfaction of its needs. Originally, these sounds are a part of a total action-pattern. Slowly, however, the action-pattern is reduced, until at length only the sound remains. In order to obtain the maximum gratification of needs, the child has to learn how to make the conventional sounds used in his social group. Hence he commences to acquire a vocabulary; he learns that each object and every situation in his environment has a name or speech sound used to designate it.

A classic illustration to show the importance of this discovery is found in the life of Helen Keller.[5] At the age of two she was deprived of sight, smell, and hearing by an attack of scarlet fever. How, in spite of these handicaps, she was graduated from Radcliffe College and achieved great distinction in public life is a story that every student of psychology should read. While Miss Keller was still a little girl, she and her teacher were taking a walk one morning. Hitherto she had not been able to learn much of anything, but on this particular morning a favorable situation occurred. They walked to the well house, where some one was drawing water. The teacher held Helen Keller's hand under the spout; and, while the water gushed over it, she tapped out the code letters *w-a-t-e-r* on the other hand. Recalling the experience years later, Miss Keller said that for the first time she realized that everything has a name. As they continued their walk on that morning, the teacher gave the names for many other things; and the environment commenced to take on meaning for the girl.

This example gives us an insight into the growth of meaning. At first the code was presented as a part or element in a total situation. The feel of the water was the principal aspect of the situation, and as an accompaniment there was the experience of the code letters. Through experience, therefore, the code letters alone were sufficient to represent

[5] Every student of psychology should read two great books by Helen Keller: *The Story of My Life* and *The World I Live In.* The allusion here is to the former.

the situation. By further experiences she was able to obtain an abstract concept of *water*. In a similar fashion all meanings are developed. Through the use of language we are greatly helped in getting an elaborate system of symbols which stand for the concrete and the abstract aspects of various phases of our environment. The young child has a ready-made set of symbols to learn, and he acquires facility in their use by the process of slow development. How these symbols originated in the history of the race is still unknown, though many theories have been proposed to account for the origin of language.

Egocentricism in meaning.[6]—We tend to interpret our environment as it affects us, and thus our meanings are likely to be egocentric. A simple illustration occurs in the way we interpret the following sentence: The man walked down the street. On first thought we might say, Here is a clear, simple, unambiguous statement; there is no difficulty whatsoever in understanding it. Let us, however, consider the sentence more deliberately. What sort of man? how does he look? how old is he? does he walk fast or slow? and, is the street in the residential or the business section? In short, can we be at all sure that we know what meaning the author tries to convey by this sentence? If the author used the medium of motion pictures, we could then get a clearer notion of his meaning; but words, at best, serve only to suggest meaning. Since each one of us tends to be highly egocentric, we seldom raise any doubts about our ability to understand the real meanings of language. In other words, we believe that we understand; hence we are not perplexed by any doubts about the suitability of our meanings.

Through science, on the other hand, we receive training in objectifying our system of meanings. The scientist tries to understand the environment as in itself it really is. He seeks to objectify his system of meanings and to rule out the personal factor. Oftentimes students are perplexed by the vocabularies used in the various sciences; they wonder why strange and unfamiliar words are employed. The explana-

[6] Jean Piaget, *The Language and Thought of the Child* (Harcourt, Brace, 1926). Though rather dry reading, this book makes an important contribution to our understanding of the nature of the child's concepts.

tion is that the scientist feels a need to use terms which have exact meanings for all who use them. Many lawsuits may be traced to the varying interpretations which can be placed upon words and phrases; hence legal documents are worded with scrupulous exactness to rule out the possibility of divergent meanings. Centuries of argument about the meanings of various Biblical passages illustrate the difficulty of agreement upon exact meanings. To avoid the likelihood of ambiguity and of different interpretations, the scientist, therefore, invents a new set of symbols, each of which has a precise meaning.

Imagination and Creative Thinking

Daydreams.—Many of our daydreams are psychological devices whereby we manage to escape from unpleasant situations.[7] We can reshape reality to conform to our unsatisfied motives, and we can immediately attain our goals through the use of daydreams. During a dull period in the classroom we can turn our thoughts into more pleasant fields; we can lessen the tedium of a long journey by daydreaming; and we can achieve our highest ambition without experiencing any of the frustrations or disappointments which occur so frequently in the life of reality. In this type of imaginative activity, three important characteristics stand out: first, mental activity proceeds without external stimulation; secondly, we can effect a radical reorganization of the elements of our past experiences, and thus form a new series of kaleidoscopic patterns; and, thirdly, we can thereby mold reality so that it better suits our needs and purposes.

Reverie, musing, castle-building, phantasy making, and woolgathering—these are a few common terms which are used to designate the simple devices whereby we manage to escape from reality. Everyone is familiar with the nature of daydreams from personal experience; few, however, have analyzed their own daydreams to determine the needs which daydreams satisfy. Essentially, the daydream represents a wish fulfillment. The poor lad may daydream about having

[7] See J. Varendonck, *The Psychology of Daydreams* (Allen and Unwin, 1921).

great wealth; the wallflower, about being the belle of the party; or the ambitious young person, about having reached a position of honor and distinction. Not all our daydreams are of this pleasant type, however; for we sometimes imagine that we are getting even with our enemies, putting somebody in his place, or telling someone "where to get off." Nothing is impossible in daydreams, whereas in the life of reality we experience constant frustrations. It is no wonder, then, that we frequently resort to this device.

A great deal of our behavior seems to be of a random, purposeless type. All of us spend much time in "frittering about." Self-study will reveal the fact that many of our daydreams are trivial, aimless, and purposeless, just as much of our overt behavior exhibits similar aspects. Whenever we "look into our minds," we find a sequence of thoughts and images—called the stream of consciousness—which often seem to be as meaningless as our idle play with objects on our desk. Therefore, it is rather far-fetched to say that all daydreams represent imaginary gratifications of frustrated wishes. In some of them the wishful nature is clearly evident; in others it is non-existent.

Much has been written about the supposed harmful nature of daydreams. Evidently, some writers are convinced that daydreaming is a bad habit, one that should be stamped out in the child as soon as it is discovered. These people would have everyone adjust his life to the "reality principle," and they regard daydreams as harmful escape mechanisms. These views are rather extreme and unwarranted. Through daydreams the young child develops his powers of imagination. Legends, fairy tales, and the classical myths contribute much to the fabric of children's daydreams, and thus they prepare children to enjoy in later years the expressions which artists, musicians, and authors have given to their sophisticated daydreams. An individual who never escapes from the humdrum of daily life tends to become stodgy, unimaginative, and bored. Occasionally a retreat into the realm of daydreams has great recreational value; when we return to the life of reality we have a new zest for our work. To counsel a person not to daydream would be like advising him never to attend the theater, never to read

anything except a "practical" book, or never to enjoy the landscape unless he were planning a real-estate subdivision. Only when daydreams are habitually substituted for the life of reality do they become detrimental to the welfare of the individual. Any teacher of English composition knows that there is little real danger that high school boys and girls will become too imaginative.

Dreams.[8]—Since a great deal of unwarranted nonsense has been written about dreams, scientific psychology has been tardy in making a study of them. Now it is obvious that dreams, like all other mental activities, can be scientifically investigated. A dream is the succession of mental imagery which takes place during some (or all) conditions of sleep. The principal feature of dream imagery is its bizarre character. Some dreams are so impressive that we remember them after waking up; many of them are so trivial that we can scarcely recall a single detail. Whereas in waking life we tend to test our daydreams by reference to reality, in sleep we do not objectify the thought stream. Consequently the dream is likely to be illogical and fanciful. Sometimes, however, the dream may be a reproduction of some experience which occurred during waking life.

The imagery of many dreams seems to originate in sensory patterns. Thus, if we have eaten unwisely before going to sleep, we may dream of being pummeled in the stomach. In dreams we do not interpret the sensory patterns in our normal manner; hence we might have bizarre images of some monster who is the attacker. A patient whose hospital room was located near the elevator heard the noise made by the opening and closing of the door. This noise he interpreted in his dream as being the sound of a ship breaking up on the rocks, and he was greatly frightened by his predicament. A fly buzzing near the sleeper's head may give rise to a succession of images about air raiders. In short, many dreams seem to consist of a misinterpretation of patterns of sensory stimulation.

[8] The classic reference to an ingenious theory of dreams is S. Freud, *The Interpretation of Dreams* (Macmillan, 1913). Another interesting book is W. H. R. Rivers, *Conflict and Dream* (Harcourt, Brace, 1923). For a critical evaluation of conflicting theories, see Wm. McDougall, *Outline of Abnormal Psychology* (Scribner, 1926). chaps. vii, viii, and ix.

Other dreams seem to be the gratifications of frustrated wishes. In these dreams the imagery derives its meaning from the past experiences of the sleeper, though it may be exceedingly difficult to interpret. Joseph dreamed that he and his brothers were binding sheaves in the field and that his sheaf stood up while those of his brothers bowed down before it. When Joseph had related this dream to his brothers, they hated him still more. They saw at once that Joseph had dreamed of reigning over them. Obviously this is a wishful dream, the imagery for which came from waking experiences but the meaning of which was symbolic of Joseph's present condition of frustration. On another occasion Joseph dreamed that even the sun, the moon, and eleven stars made obeisance to him; and for this presumptuous thought his father rebuked him.

Some dreams directly reveal our fears, anxieties, and worries. After a long drive through heavy traffic, a man dreamed repeatedly of having serious accidents on his trip. During the day he had experienced several narrow escapes from collisions, and these memories were revived in his fitful slumber. A young woman who had just had an employment interview dreamed on eight successive nights of crossing a bridge which began to slant upwards as she approached the end. The imagery was traced to familiar recollections of a bridge over which she often took a walk and to her first sight of a large drawbridge in New York City. The meaning of the dream was related to more subtle mental processes. The employment interviewer had been somewhat brusque and derogatory towards her, although he had offered her the position. Thus, the inability to cross the bridge may have symbolized her fear that she could not overcome his prejudice no matter how hard she tried. That this interpretation is likely an adequate one may be indicated by the fact that the young woman married hastily and did not take the position.

Creative imagination.—In the daydream and the dream the mental processes are not controlled and directed by the objective environment. In other words, they are not subjected to the test of reality. In creative imagination, however, all the mental processes are tested by reality and they

are directed by the conscious purpose of the thinker. An interesting example is the story of James Watt, who perfected the steam engine for use in pumping mines. He had many years of training and experience in the use of tools and in instrument making before he made his invention. While employed as a maker of scientific instruments at Glasgow University, he was once given a crude model of a steam engine to repair; and he became so much interested in the mechanism that he spent a year in studying the principles underlying it. One Sunday morning, while taking a walk, he suddenly had a flash of insight about making use of the steam engine and about the improvements which would be necessary. Hurrying to the house of a science instructor, he described his inspiration and was told that he probably had the right ideas. Within a few days James Watt had constructed a steam engine which could be used to pump water out of the mines.

Note that creative imagination may be analyzed into a number of steps.[9] First, there is a time of preparation; next, a period during which little or nothing is accomplished; third, a sudden flash of insight; and, last, the verification or application of this insight. Helmholtz, describing his own thought processes, recognized similar stages in his thinking which led to scientific discoveries. Recently a scholar has gone over all the books and available notes which Coleridge had read before he wrote "Kubla Khan." As you will recall, Coleridge dreamed of the complete poem. When he awoke he started to write it down, but after the fifty-fourth line had been recorded Coleridge was interrupted. Never again was he able to recall what the rest of the poem was. This scholar found that Coleridge had put a great deal of material "down the well" before the inspiration came to him. All the allusions and many of the phrasings are to be found in material which the poet had read. Thus, there had been a thorough period of preparation, followed by a time of "incubation," which, in turn, led to the sudden inspiration and to the task of writing it down.

One more example will help to make clear the steps in a

[9] For a full account of a theory of creative thinking, see Graham Wallas. *The Art of Thought* (Harcourt, Brace, 1926).

complete act of creative imagination. After weeks of futile efforts to decipher some fragmentary inscriptions, a professor of Assyriology had a remarkable dream. It seemed as though an ancient priest appeared before his eyes and related the history of the fragments, which, he said, were parts of a votive cylinder. This information furnished the cue to the professor; and so vivid was the dream that he awoke immediately and wrote down the revelation. On the following day when he resumed his labors, he found that the suggestion was plausible. Note that he had been working for a long time on this problem (the period of preparation); that he had reached an *impasse* in his thinking (during which time there may have been the mental activity of "mulling over" the problem—the period of "incubation"); that the insight came suddenly (in this case, through a dream); and that he proceeded to verify or test the validity of the insight.

It is important to observe that inspirations do not come from thin air. To get an insight into a situation or to obtain the materials for creative imagination, one must undergo thorough preparatory studies. In the next place, there seems to be a time when the thought processes do not lead to a solution of the difficulties or to an appropriate reorganization of past experience. Presumably, during this period there is a continuance of the mental activity, but it takes place on the fringe of consciousness. This stage is called, therefore, the period of incubation. The insights come with surprising quickness; they seem to come from nowhere into the field of clear consciousness. Unless one keeps a journal in which to record these inspirations, they are soon lost from memory. It is of interest to note that they often make their appearance when we are engaged in other activities which have no direct relation to them. Stevenson remarked that his plots came to him in dreams or on walks, rather than when he was seated before his desk; and other creative writers have reported similar experiences. It is worth while to form the habit of testing out these flashes of insight, many of which may be worthless or trivial, but some of which may lead to an improvement in our adjustments to the environment or even to original productions.

Reflective Thinking

Steps in an act of reflective thinking.[10]—Thought processes which are consciously directed towards the solution of a difficulty are called *reflective thinking.* At every step the mental processes are checked by reference to the realities of the situation, and the conscious effort is made to find out the valid relationships between two or more phases of the situation. First of all, there must be an upset in complacency, or a felt need, to initiate the process. If we thoroughly understand the situation and are able to make a satisfying adjustment to it, there is no occasion for reflective thinking. When we experience a difficulty or obstruction, however, we have a felt need to examine the situation more closely. Thus, the second step is to locate and define the difficulties which obstruct us. If the difficulty is an algebra problem, we proceed to analyze it in order to get ready to try for the correct answer. If the frustration is our present situation, we may seek to analyze our capabilities as the necessary preliminary for bettering an undesirable status. Thirdly, we formulate various plans of action or hypotheses. For instance, if our situation is not congenial, we make plans to better ourselves. We might consider the possibilities of entering various professions, taking steps to improve our relationships with our associates, or developing new outlets for our desires.

The fourth step in reflective thinking is to weigh and consider each proposed course of action. In the science laboratory the hypotheses may be tested by experimental procedures. In solving problems of personal life adjustment, one may seek advice from books and acquaintances, try to get creative insights after preparatory study, or obtain the counsel of experts. To solve personal problems by the experimental method may be a disastrous procedure; for, whereas in the laboratory the wreckage may be cleared up when an hypothesis proves fallacious, in personal life there is no such opportunity to rectify blunders. The fifth, and final, step is to verify the hypothesis which is finally selected as the one

[10] The most important reference dealing with the analysis of reflective or scientific thinking is John Dewey, *How We Think* (Heath, 1933).

most likely to result in an appropriate adjustment. Naturally, the steps are not always so clearly delimited as indicated here.

Repeatedly in daily life we encounter problems which must be solved by reflective thinking. To be sure, we make snap judgments oftentimes instead of proceeding by the laborious methods of reasoning. Since it is troublesome to endure an upset in the optimum balance, there is a tendency to jump hastily to any conclusion which seems to have promise of being a solution. The advantage of training in science is that it gives us a technique for problem solution. We learn how to guide and control the mental processes in arriving at valid conclusions. Unfortunately, many of us do not carry this training over to the solution of the problems of daily life. The explanation is to be found in the fact that tensions are unpleasant; hence we dislike to delay in making a choice or to ponder over alternative courses of action. Every one of us is familiar with the more or less disastrous consequences of deciding important problems by hasty, superficial reasoning.

Some Common Disorders of Thinking

Emotional thinking.—Strong emotion and reflective thinking are at opposite poles. When we are emotionally aroused we cannot think clearly or accurately. The student often finds that answers which he could not recall during the examination hour occur to him as he walks sorrowfully home. The reason for his inability to think clearly during the examination is that he became emotionally disturbed by fears of failure or of not acquitting himself well. Perhaps all of us have had the experience of becoming emotionally disorganized when we encounter a hard problem, and of our increasing inability to work out a reasonable adjustment as a result. There is a type of thinking, however, which is closely tied up with the emotions; hence it may be referred to as emotional thinking. Our beliefs furnish a good example of this type of mental activity.

Many of our beliefs afford us a measure of complacency in this world of turmoil and frustration. They are the groundwork upon which our personality stands; and when they are

attacked, we become upset, troubled, or resentful. For instance, we have a system of beliefs about our country, about religion, and about our own personal worth. When critics raise doubts concerning the validity of these beliefs, they attack the very essence of our personalities. Consequently we seek to justify our stand or to stifle the criticism. As a cynic has said, we do not reason; we merely bolster up our prejudices. If we bear in mind that the basic motive is the wish to regain or to retain the optimum balance, it is not difficult to understand why this is the case. Many of these cherished beliefs have given us a sense of complacency during the years; naturally, therefore, we wish to maintain them.

When they are insistently brought into question, two courses of action may be taken. First, there may be an overt conflict with those who hold opposing beliefs. These conflicts may range from international wars down to personal quarrels between members of a face-to-face group. Some of them result in attacks by use of force; some in threats; and others in subtle derogations of those who maintain conflicting beliefs. As every intelligent adult knows, his friends hold some cherished beliefs which seem unfounded or puerile to him but which he never questions, lest the friendship be broken. Secondly, one belief may conflict with an antithetical belief held by the same individual. In this case the field of conflict takes place in the mind of the person. For example, one may have acquired a strong belief in the brotherhood of man and also an equally strong belief about loyalty to one's country. In time of war these two opposed beliefs might come into conflict. Through emotional thinking, however, a specious type of reconciliation may be temporarily effected. A familiar way to escape from tensions of this type is to have "logic-tight compartments" for irreconcilable beliefs. Thus, for instance, one might refuse to consider the possibility of conflicts among divergent beliefs.

Rationalization is the term which is applied to emotional thinking. In brief, this word means the giving of "good" reasons rather than real reasons for continuing to hold a given belief. Prejudices are good examples of beliefs upheld by rationalization. Some beliefs give a large measure of se-

curity, and yet at the same time we are troubled by some doubts about their validity; hence we seek for "good" reasons to bolster up these beliefs. Various manifestations of the fear emotion are aroused as we face the fact that there may be good cause for questioning the validity of these convictions. Thus, the more insecure we feel about the grounds for them, the more effort has to be exerted to find causes for maintaining them. The strongly prejudiced individual, therefore, has to be constantly active in finding reasons for his beliefs. If he were secure in his convictions, he could maintain his complacency without effort; but, since he feels insecure, he must work hard to convince himself of the validity of his views. Hence he may feel more at ease if he can join an organization of like-minded persons who can strengthen one another's beliefs.

Delusions.[11]—A fallacious belief which is held in spite of all evidence to prove its untenability and which few other people in the group hold is called a *delusion.* In some instances delusions are correlated with physical disorders; in other cases they are the outgrowth of long-continued emotional thinking. The paretic, for example, has typical delusions of grandeur; he speaks of having millions of dollars or of being a close friend of eminent people. In the depressed patient the delusions may relate to a belief that he has committed the unpardonable sin, that he is without friends and money, or that his body has been strangely altered. Delusions, in short, are one of the prominent symptoms in certain types of mental disorders. They may, however, be developed by individuals who are physically normal.

For example, an eminent man once decided to test the hypothesis that anyone might develop a delusion.[12] Therefore, he started to make himself believe that people were constantly saying derogatory things about him. Whenever

[11] Many interesting examples of mass delusions are contained in an old book, now difficult to obtain, entitled *Memoirs of Extraordinary Popular Delusions* by C. MacKay (London, 1852). The section on *paranoia* in any good manual of psychiatry will give an account of the nature of individual delusions. It is worth while to consult Wm. McDougall, *Outline of Psychology* (Scribner, 1926), chaps. xx and xxvii, for a good account of delusions.

[12] It is said that Sir Francis Galton once tried this experiment.

he approached a group of his acquaintances, he took the mental set that they were criticizing him and that his intrusion into the group made them break off their hateful remarks. Within a short time, he discovered, no sense of effort was required to establish this belief. He found that when he walked down the street it seemed as though passers-by were turning to look askance at him. Becoming frightened by the mental condition which he had induced by his experiment, he took immediate steps to unlearn this delusion. He found that it was far more difficult to overcome the delusion than it was to acquire it in the first place. "Breaking a habit is more difficult than acquiring it."

There may be various degrees of relationship between the thought processes and the world of objective reality. Effective thinking is, of course, constantly tested and modified by reference to objective reality, directed by the orderly procedures of logic, and aimed at the achievement of a suitable adjustment to the environment. Frequently, however, the thought processes are dissociated from reality, as, for example, in daydreaming. When thoughts are elaborated without being constantly verified by reality testing, delusions may appear. For the most part, these false beliefs are unsystematized and bizarre; and usually they do not seriously disrupt the personality. When they are revealed through conversation or behavior, they may be taken as evidence of lack of sophistication, ignorance, limited experience, or trivial aberrations. Chiefly, they pertain to the system of beliefs around which the personality is organized. If, therefore, the individual should admit that these beliefs are untenable, he would be forced to reorganize his personality. Since it would be exceedingly difficult and upsetting to find new beliefs and to discard the old ones, the individual prefers to support his status by emotional thinking. As one person said, "I'm willing to be convinced that I am wrong, but I'd like to see the man who can convince me."

Delusions play a great part in mental disorders. During periods of emotional depression, for example, the patient may experience delusions of self-accusation. Among people who have received training in evangelical theology, this delusion may take the form of a conviction that they have com-

mitted the unpardonable sin.[13] As a rule, when the patient has received adequate medical care, these delusions clear up. Delusions of being persecuted are common in some types of mental disorders, and they may occur in persons who have a strong feeling of personal inadequacy. It is, of course, much more satisfying to believe that one's failures are due to the machinations of other people than to one's own incompetency. Grandiose delusions are also common in certain types of mental illnesses, and these beliefs may occur among individuals who are not diagnosed as psychotic. For example, the belief in one's own importance may, from the standpoint of other members of the community, be untenable; and yet, because it is profoundly satisfying to hold, it is maintained at all costs. This trait is frequently found in psychopathic individuals.

The end-state to which all mental activity is directed, whether normal or pathological, is the restoration or maintenance of a condition of optimum equilibrium. If, therefore, fallacious thinking affords the individual a measure of satisfaction, it takes precedence over correct reasoning. In other words, it may be more gratifying for the individual to believe that his failures are attributable to the jealousy and plots of his associates than to his failure to merit social recognition. If that is the case, he may acquire a delusion of persecution. This delusion may lead to a belief that he would not be persecuted if he were not important; hence a delusion of grandeur may be developed on the basis of a persecutory delusion. Unusual conceit may be the basis upon which grandiose delusions are developed. The essential feature of all delusions is that they are the outgrowth of thought processes which are not tested by reality but which satisfy a fundamental need in the personality. To correct delusions, therefore, two things are necessary. First, the individual must be restored to optimum physical condition. That in itself suffices to correct many erroneous beliefs and delusions, since clear thinking depends in part upon good physical health. Secondly, the patient may need to be reeducated in such a way as to find satisfactions in realistic,

[13] The student of psychology will be interested in reading Hawthorne's story of a man who had this delusion—*Ethan Brand*.

rather than evasive or fictitious, adjustments to the environment.

The Concept of Self

Self-confidence.—The normal personality is integrated around a well-founded belief in personal worth, integrity, and self-confidence. When doubts are raised concerning our personal worth or dignity, we are profoundly upset. The foundations upon which we have based our orientation to life are thereby weakened or torn away; consequently we are greatly disturbed. Nothing could be more disastrous to an individual than to find that everything he does is criticized or ridiculed by his associates. His self-confidence might be destroyed completely, or he might be able to work out compensatory satisfactions. The strong likelihood is, however, that he could find no fictitious consolation for such a fate.

Many experiences contribute to the building up of a wholesome belief in personal worth and self-confidence. Particularly important are the experiences of early childhood, during which period of life this belief is established. If the child is given tasks beyond its capacity or if adults disparage the child's efforts to succeed, a normal amount of self-confidence cannot be acquired. Hence at this time of life it is especially necessary that the young child be properly guided in home and at school. Adults should not judge the child's adjustments from their own mature and sophisticated point of view. Conversely, it is essential that the child should not experience successes without effort, lest an unwarranted belief in personal worth be developed. Hence excessive praise, solicitous aid, and easy tasks may create an unjustified self-confidence that will bring disaster in later years.

Two broad types of situations play an important part in the creation of this belief. First, the environmental obstacles which the child overcomes or which frustrate him are important factors. These obstacles may be objective or symbolic. A mechanical puzzle, for instance, is an example of an objective difficulty which, with persistence, may be solved. The curriculum of the public school, for example, is a series of symbolic obstacles that have to be overcome.

Owing to a series of disastrous experiences in trying to master elementary school arithmetic, many persons have developed a fear of mathematics. This subject is, no doubt, poorly organized and badly presented; hence a great many adults have little confidence in their ability to use mathematics in solving their problems of adjustment. In many situations, however, the ability to employ mathematical symbols is a distinct aid in working out a better adjustment. The higher we go in the curriculum, the more abstruse are the subjects which we are expected to master. If one has been poorly or inadequately prepared for advanced studies, he may encounter a great many frustrations. These experiences, of course, tend to interfere markedly with the belief in one's ability to meet the ordinary demands of the environment.

The second type of experience which relates to the belief in personal worth is the response which other people make to us. Young children are notoriously indifferent to the personal feelings of others; hence they give derogatory nicknames to youngsters who are deformed or handicapped in any way. Oftentimes adults find it difficult to be patient with young children; hence they belittle childish efforts to achieve successes. Some parents set goals which are far beyond the capacity of their children, and then bitterly reproach the youngsters for failing to achieve these expectations. As school teachers know, parents who themselves did not earn high grades expect nevertheless to have their children stand first in their studies. Since our social order emphasizes competitive endeavor, adults find that praise and advancements are rarely given. Those in superior positions seem to be hypercritical of persons who seek to rise to their level, and in the competition for positions of high status many individuals must undergo a series of frustrations and defeats. Such experiences, of course, tend to destroy self-confidence or to motivate the person to find compensatory outlets.

The Ego.—From the objective standpoint, the personality is the sum-total of the way we affect other people.[14] Their

[14] Personality is something more, however, than that which is implied in this statement.

responses to us are determined by two broad factors. First, they respond to us in terms of the stimuli which we present to them. Thus, if we are "normal" in physique, deportment, and beliefs, we may be accepted into the group without question. In general, this is a gratifying state of affairs, and hence we seek to continue to enjoy it. Secondly, other people respond to us in terms of certain stereotypes which they apply to us. Stereotypes are the product of emotional thinking, and they do not stand up under critical analysis. They are, nevertheless, potent determiners of the responses which other people make towards us. A simple example of a stereotype is the folk belief that blondes are frivolous or that redheads are fiery tempered. When we are not fully accepted by the group, we become conscious of an aspect of our personality which may be termed the Ego. We believe that we affect other persons in such and such a way or that, if they really knew us, we would affect them thus and so.

The Ego is organized around the belief in personal worth. Membership in a learned profession enhances one's feeling of personal worth; hence it may be said to expand the Ego. Conversely, a denial of recognized status tends to frustrate the Ego. Thus the small boy who is rejected by the gang experiences painful Ego frustrations. By way of compensation he may identify himself with the heroes of Wild West motion pictures or radio programs. Thereby he enhances his feeling of self-importance, or, as the Orientals put it, he "saves face." A frustrated adult may join a secret society and expand his Ego temporarily by wearing ornate regalia and being addressed by an imposing title. Normally, however, parents and teachers help the child to map out a program which will enable the individual finally to achieve a status wherein he can enjoy a feeling of justifiable personal worth. Religious education, of course, contributes a great deal to the building up of a wholesome Ego. Thus, the religious person can believe in his personal dignity and worth, no matter how much he may be disparaged by associates or frustrated by adjustment problems.

Personality, therefore, has a subjective aspect which is much more important than its objective manifestations. It is more important that we think well of ourselves, in other

words, than that other people tacitly accept us as a member of the group. In the democratic social order the basic belief is that every individual is a personality with rights, privileges, and duties. Through the public school system we attempt to give each pupil a full opportunity to develop a belief in his personal worth and value. Attempts are made to regulate employers so that they cannot exploit their employees or destroy their sense of dignity and worth. Of course, we are far from having reached the ideal state of affairs in which every member of our society is free to maintain a desirable type of Ego. That, however, is the goal for which we strive in a democratic social order.

We should note that the genesis of the Ego lies in the life experiences of the individual. That is, the Ego is not inherited. It is organized around the belief in personal worth, and it is developed through the sequence of adjustments which one makes to the environment. Whatever tends to make one feel unwanted or insecure, therefore, weakens the Ego. Familiar illustrations of attempts to bolster up a weak Ego are found in boasting, derogating others, attributing one's failures to physical infirmities, or retreating into a realm of daydreams. The persistent boaster feels inadequate; hence he tries to convince himself of his own importance by constantly bragging. He magnifies petty triumphs into major victories, and fools no one but himself. By derogating other people, one may be able to lessen the burden of maladjustments and failures. If by malicious gossip an individual can convince himself that no one else is worthy, he may be less troubled by his own weak Ego. A familiar device whereby to strengthen an insecure Ego is to blame one's failures upon imaginary ailments. Since most of us are solicitous for those who are sick, the individual with a weak Ego may seek to win our sympathy by feigning infirmities. A common type of evasive adjustment is to seek through daydreams for the triumphs which cannot be found in reality. These devices are used to "save face," that is, to bolster up a weak Ego.*

* Note: Consult a number of textbooks in abnormal psychology, psychiatry, or mental hygiene for supplementary material on the nature of the Ego and its importance.

Will and Purpose

Psychological determinism.—The psychoanalysts emphasize the interesting theory that every act is determined. For example, slips of the tongue are taken to reveal the "unconscious mind," since presumably they do not happen by chance. A young husband, recently back from his wedding trip, told his companions in the office, "We had a fine money-moon (*sic*)." The psychoanalyst might use this slip to explain that the bridegroom was more apprehensive about the expenses of his honeymoon than men usually are at such a time.[15] Misplacing articles, forgetting to write letters, failing to keep certain appointments, or breaking personal possessions are said by the psychoanalysts to be "unconsciously determined." Thus the young woman who lost an expensive wrist watch was told that she really hoped to get a better one; consequently she was determined to fasten the old one insecurely. Of course, much of our behavior is determined by unverbalized motives. That fact, however, hardly justifies us in hastily accepting the elaborate hypotheses of psychoanalysis. We cannot substantiate a bold hypothesis by citing a few isolated facts to support it or by twisting the explanations to cover a multiplicity of happenings.

Past experiences certainly do determine our interpretations of present situations. How we behave in a given situation is dependent largely upon our antecedent training in analogous situations. Consequently, if we know an individual's past history, we can predict within broad limits how he will behave in various situations in which he is now placed. Should we find that he has been in the habit of having a tantrum whenever his wishes are not gratified, we can predict that he will likely continue to behave that way in the future. If his life history indicates that he has made persistent and intelligent efforts to overcome frustrating situations, we can reasonably expect him to do so now. It is very doubtful, however, if we can go so far as to say that every

[15] Examples of the possible significance of slips of the tongue, some of them rather far-fetched, are to be found in Freud, *Psychopathology of Everyday Life* (Macmillan, 1914).

single response is determined and that we have no free choice whatsoever. Although a certain type of reasoning may favor the hypothesis of strict determinism, daily experience lends support to the view that we are free to choose.

Will.—As a theological concept, *will* does not lie within the province of the psychologist. Whether we are strictly determined or whether we are free to choose is a matter of personal belief. In the foregoing paragraph the view has been stated that daily experience affords us many evidences of freedom of choice; however, those who take the mechanistic point of view are able to make out plausible arguments on the other side. From the psychological standpoint *will* is an ambiguous term. In the first place, there have been many philosophical discussions about the nature of will and its place in human behavior. Since few philosophers have agreed with one another in these discussions, the psychologist is as much in the dark as anyone else regarding the value of their contributions to this topic. Secondly, will is sometimes regarded as the "mainspring" of human action or as the source of all motivation. Although that may be a justifiable belief, it would be exceedingly difficult to find scientific evidence to support it. Thirdly, will is occasionally referred to as though it were a mental faculty or an entity which may be strengthened by exercise. This conclusion the psychologist also rejects, since it is unsupported by scientific evidence.

From the psychological standpoint, will is a characteristic of some types of behavior. When we have to refrain from making a response until we have thoroughly investigated the situation, we are said to use will. For example, a soldier was castigated by an irate officer who found a dirty rifle in his possession at inspection, and on returning to the barracks the soldier told his friends of his great difficulty in refraining from angry retorts. In other words, the soldier checked his responses to the situation until a more favorable time. We sometimes employ the term *will* to refer to such types of behavior as this. When there is a conflict between two or more opposed motives, we weigh our decisions with care on some occasions; at other times we make a hasty choice. If we delay our choice until after we have thought out the possible

consequences of each action, we may be said to use will. When we are aroused to a point where we summon up all our energy to overcome an obstacle, we use will. In other words, the word is sometimes used to refer to strongly motivated behavior.

A person who cannot make decisions for himself is said to have *abulia.* One who decides hastily and without proper foresight of consequences is referred to as impetuous, overeager, precipitate, or uninhibited. The normal person acquires through experience a measure of ability to delay immediate responses in many situations, to think over the possibilities of each choice, and to make a decision which, when carried out, will effect a satisfactory adjustment. It is this characteristic of human behavior that is included under the term *will* as the psychologist uses it.

Purpose.—Since the basic motivation is to secure or to maintain the optimum equilibrium, all behavior is, therefore, purposive. The purpose is, of course, the reduction of tensions and the restoration or continuance of a satisfying status, whether physical or mental. In a very real sense, consequently, eating when hungry and drinking when thirsty are purposive activities, since they restore the physiological balance. In fact, any behavior whatsoever that is directed towards the gratification of a motive is purposive activity. The complicated social motives, such as the wish for economic security or for recognition, lead us to set up definite goals towards which we work purposefully in order to gain satisfactions. Conversely, if we have not thought out suitable courses of action and set up definite goals to attain, our behavior is purposeless and ineffective in reducing the tensions.

More specifically, a purpose is a carefully planned course of behavior that will eliminate a motive. If, for instance, the motive is a desire to enjoy a secure old age, the fears of being dependent upon charity at that time of life might be eliminated by the establishment of a habit of saving a certain sum of money each payday. Insurance companies offer annuity contracts to young people who feel a wish to eliminate the fear of an indigent old age. If the motive is a wish to occupy a status of respect in the community and to earn

a good income, the young person may plan a long course of training to achieve such a position. Whenever we direct our behavior towards definite goals, immediate or remote, we act purposefully. The underlying reason why we set up such goals is, of course, that we are motivated to maintain or restore a satisfying adjustment.[16] If remote goals are sufficiently attractive, they may make the burden of tensions much easier to bear in the present.

Throughout this discussion we have referred to the fact that human behavior is profoundly affected by learning. We learn, for instance, to delay making a response to a situation until after we have deliberated at some length; we learn to set up definite goals towards which we direct our behavior; and we acquire an infinite complexity of wishes because of our capacity for learning. Our next topic, therefore, is an inquiry into the nature and the characteristics of the learning process.

QUESTIONS AND EXERCISES

1. How does a child develop a concept of *four, home, dog,* and *food?* Show how a large number of specific experiences are essential in concept formation. How does a concept differ from a percept?
2. Give some illustrations of children's humor and show how they are the result of faulty concepts.
3. Try to tell a brief tale entirely by gestures. How well does your audience grasp the meaning of your story?
4. Many families have certain gestures and remarks the meaning of which is not intelligible to outsiders. Give several examples. How did these gestures and phrases get their meaning? When the full situation is explained, can other persons now understand the meaning? What does this question contribute to an understanding of the nature of meaning?
5. What is an example of an egocentric concept? Why are concepts of this type common among young children?
6. Keep notes on some of your daydreams. Do you ever have daydreams of getting even with some one? Are most of

[16] An unusually clear and helpful discussion of this whole point of view is found in R. S. Woodworth, *Adjustment and Mastery* (Williams and Wilkins, 1933).

your daydreams pleasant? Do any of them indicate that you are seeking for satisfactions which are denied in reality? Are all your daydreams of a wish fulfillment type?

7. Do a person's dreams give us an insight into the motives and the frustrations which disturb his equilibrium? Do you believe that all dreams are the fulfillment of frustrated motives? Explain in detail and give illustrations to support your answer.
8. Give some examples of dreams that seem to be the result of misinterpretations of sensory stimuli. Give some illustrations to show that certain dreams are a continuance of mental activity that took place during the day.
9. Try to draw an imaginary animal. Is it original or is it a new combination of material with which you were already familiar? Can you imagine something that is wholly and completely new? Is it correct to say that imagination is a radical reorganization of past experiences? Explain.
10. Give some personal illustrations of the four steps in creative imagination.
11. How much of the thinking of the average person is of an emotional type? How often does the average individual think in a logical, scientific manner? What evidence can you cite to justify your opinion?
12. If we were foolish enough to want to acquire a delusion, how ought we to proceed? Give a definite set of instructions. Do people ever develop bizarre and unfounded beliefs in this way?
13. Give some original illustrations of the various steps in reflective thinking. Why does the average individual accept unfounded opinions rather than use the methods of reflective thinking to arrive at conclusions?
14. What are the effects when a person loses self-confidence? Explain fully. How would you advise such an individual to proceed in regaining self-confidence?
15. How do other people act towards us? Why do they act in that way? If the responses are unfavorable in certain cases, why are they of that type? How do we "save face" when we do not get favorable responses?
16. Are we free to choose how we shall behave in a given situation? Are some responses definitely fixed and determined? Give some examples if you answer in the affirmative. Give some illustrations of free choice.
17. Trace the origin, the development, and the effects of an

ambition. What is the purpose of an ambition? Do young people have a sense of relief when they have mapped out a program of advancement for themselves, even though many years may be necessary to carry out the plan? Why?

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CHAPTER IX

THE LEARNING PROCESS

From the standpoint of psychology one of the most important characteristics of human beings is their capacity to learn. Imagine what the result would be if a magician could deprive the most cultured adult of everything which he or she had learned. Ability to use knife and fork, to read, to put on and to take off clothing, to speak and write—these are but a few of the most apparent deprivations which would result. For such an individual the environment would have absolutely no meaning, and existence would be on the vegetative level. Imagine also an unfortunate individual born without any capacity to learn. There are some individuals, known as idiots,[1] who have practically a zero capacity for learning; and anyone who has ever seen one of these tragic cases is unlikely to forget the experience.

The Nature of Learning

What learning is.—Briefly, learning is growth through experience.[2] It is the improvement in efficiency of adjustment as a result of practice or insight. For instance, the beginning golfer makes a poor showing, which he can measure by counting the number of strokes required to go around the course. Eventually, however, through practice and coaching, he makes a great improvement over this initial score. Anyone who has ever studied a foreign language will remember that much time had to be spent in mastering a

[1] A much quoted definition adopted by the British Commission on the Feebleminded is as follows:

Idiot—a person so deeply defective from birth or from an early age that he is unable to guard himself against common physical dangers.

[2] Learning is to be distinguished from maturation. Though both learning and maturation are growth, maturation is biological development that is *not* dependent directly upon use or exercise of an organ; learning is growth through experience, insights, and practice.

new vocabulary and that translation was at first a difficult task. Finally, the industrious student achieved a degree of familiarity with the language. Of course, golfers and language students differ greatly in the degree of efficiency to which they attain. Some become proficient, and others achieve only a mediocre result. In both cases, however, they derive some benefits from their practice, though in varying amounts. This modification of behavior which comes as a result of practice is called learning.

Repeated practice is not always necessary. Sometimes we learn by "catching on" at once. To illustrate, here is an example of a primitive way to multiply two numbers. It may have been one of the first short cuts to obviate the need for addition. Look over the illustration carefully and try to state the rules:

	43	86	172	344	688	172
×	20	10	5	2	1	688
						860

Note that the multiplicand is doubled each time and that the multiplier is halved, with fractions disregarded. Observe also that the sum of numbers over odd numbers in the lower line is the product of the two original numbers. Do several problems to make certain that you really know the rules. This is an example of learning by insight.[3] All of a sudden one "catches on," and that is an end to the matter. There are many examples of insightful learning in daily life. The characteristic feature of this type of learning is that the solution appears to come with great suddenness.

Trial and error.—It is clear that learning also involves a trial and error process. In some instances the trial and error

[3] Some psychologists minimize or deny the possibility of learning by insight. They are of the opinion that all learning, animal and human, is the result of the achievment of "accidental" successes in the trial and error sequence. These successful responses gradually become "stamped in" because they are satisfying, and hence repeated. The other responses become "stamped out" because they are annoying, and therefore not repeated. Everyday experience, however, shows that we are also capable of learning by insight, and many experimental studies also support this opinion. Even some animals are capable of insightful learning. See W. Köhler, *The Mentality of Apes* (Harcourt, Brace, 1925).

period continues for a long time, whereas in other cases it is so brief as to be unnoticeable. Particularly is it evident that in learning motor skills, such as typewriting or swimming, there is an extended period of trial and error before an individual reaches his maximum level of efficiency. In doing problems in algebra, such as factoring, a knowledge of a few rules and procedures helps to reduce the trial and error and

FIG. 47.—THIS CHIMPANZEE WAS GIVEN TWO STICKS WHICH COULD BE FITTED TOGETHER TO MAKE AN IMPLEMENT WITH WHICH TO REACH SOME BANANAS OUTSIDE THE CAGE. AFTER TRYING IN VAIN WITH EACH OF THE STICKS, ALL OF A SUDDEN THE ANIMAL FITTED THE SMALL STICK INTO THE LARGE ONE, AND THUS OBTAINED THE PRIZE. THIS IS AN EXAMPLE OF LEARNING BY INSIGHT. Redrawn from Köhler, *The Mentality of Apes* (Harcourt, Brace and Co., Inc., Publishers).

to hasten the achievement of a correct insight. The principal duty of a coach or a teacher is to give the learner some guidance at the outset of whatever is to be learned. Thereby the learner is prevented from wasting time in fruitless trial and error and is given some insight into the correct ways to meet the situation. In other words, the individual learner can profit by the trial and error experiences of others who have encountered a similar difficulty and from whose experiences certain rules or procedures have been developed.

Several years ago an educator, greatly impressed by the trial and error nature of the learning process, decided that he should learn to drive his first automobile without any instructions from anyone. Therefore, he practiced, by trial and error, after dark on lonely country roads. First, of course, he tried to pledge the garage mechanics to secrecy about the many repairs which they had to make on his car. They found the secret too good to keep. Though he eventually became a licensed driver, he took a too literal interpretation of the theory of trial and error. As a result of the pooled trial and error experience of other people the individual learner is at a great advantage in acquiring many new skills and understandings. He can benefit by instructions and guidance; hence he is rightly considered to be foolish if he fails to do so. Nevertheless, even though a good teacher can prevent the learner from making errors and give appropriate guidance, the mastery of a new skill or understanding is largely a trial and error process.

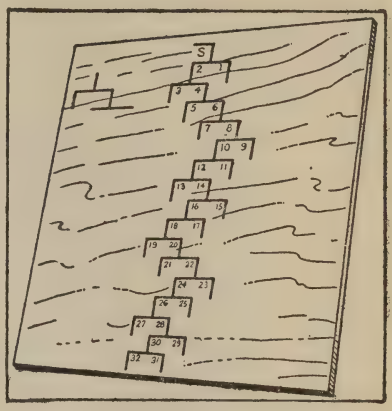

FIG. 48.—A TYPICAL FINGER MAZE. The subject, who is blindfolded, traces with his finger the sample portion in the upper left-hand corner. Then his finger is placed at the top of the maze, and he is asked to move it down to the bottom by tracing the raised portions. The human being can learn a set of cues for avoiding blind alleys, such as left, right, right, left, etc. By constructing a maze on a similar pattern for the laboratory rats, the experimenter is able to compare the trial and error learning of human beings and his white rats. Courtesy of C. H. Stoelting Co.

According to an old story, Euclid was asked by the young son of the King of Egypt whether there was no easy way to learn geometry. Euclid answered, "Prince, there is no royal road to geometry." Neither is there a royal road to the mastery of any other important body of knowledge or set of skills. The improvement of efficiency in any new set of adjustments is usually a slow, tedious process, in which a great

deal of trial and error activity is required. It would be a mistake, however, to assume that trial and error must be a blind, senseless, unintelligent process. In fact, unless trial and error is properly directed, many wrong responses might be learned. Think, for example, of a foreigner who tries to learn English pronunciation without a teacher, or of a tennis player who refuses to permit anyone else to teach him anything. The results would be both ludicrous and inefficient.

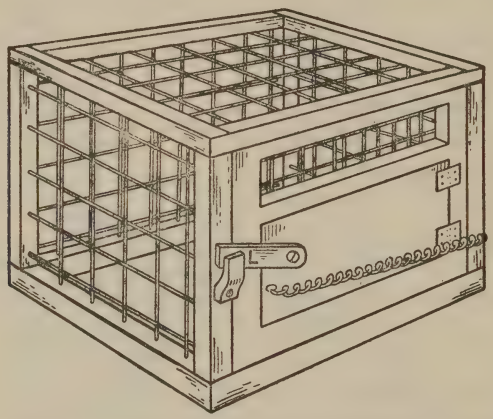

FIG. 49.—A PUZZLE BOX. The animal is locked in the box, and a reward, such as food or water, is placed outside. By reaching its paw through the wire, the animal can unfasten the door. After fifteen or twenty trials a hungry cat usually learns, by trial and error, to waste no time in mewing or in clawing at the wire or door. It goes promptly to the corner, reaches out its paw to the latch, and thus gets the food. Psychologists who believe that the trial and error aspect of learning has been overemphasized point out that the only course open to the cat is to use trial and error when it is placed in a puzzle box. From J. B. Watson, *Behavior* (1914).

The sensible procedure, of course, would be to find out what responses are appropriate to adjust to a given situation, and then to practice them from the very start. In other words, although learning is essentially a trial and error process, the individual can usually commence with a reasonably successful response. Through practice, together with insight, he can thus more easily reach an efficient level of performance.

Positive and negative adaptation.—There are two aspects to the learning process: first, we must learn what responses to make to a given situation; and, second, we have to learn

what responses are inappropriate. For instance, note the following spellings, only one of which is correct:

(1) liquify (2) likwify (3) liquefy (4) liquifie

Liquefy is often listed among the "spelling demons" because it is often misspelled. Correctly to spell this word, we have to learn that any other form than *l-i-q-u-e-f-y* is incorrect. We must, in other words, become positively adapted to the right spelling and negatively adapted to all misspellings of it.

Positive adaptation is the aspect of the learning process whereby repetition or insight fixes one mode of behavior as the habitual response to a given situation. Negative adaptation, on the other hand, is that aspect of the learning process in which various aspects of the situation are ignored and in which all other possible responses are eliminated. A simple illustration will make the distinction clear. Imagine that the physician is quickly aroused from a deep sleep by the ringing of the telephone, while his wife is unawakened by the noise. She, however, is immediately aroused by the crying of their infant, whereas the physician goes on undisturbed in his slumbers. Thus, the physician is positively adapted to the telephone but negatively adapted to the infant's cries, and his wife is negatively adapted to the telephone but positively adapted to the noise of her baby.

The contribution of a teacher or a coach is, therefore, to hasten the process of securing the proper adaptations, both negative and positive. The beginner in a high school class in German must master the pronunciation of *Ich,* which is neither *ick* nor *ish,* of course, but half-way between. Through trial and error imitation the learner may eventually become positively adapted to the correct pronunciation of this troublesome pronoun, and negatively adapted to every other way of saying it. People who live near the railroad tracks become negatively adapted to the noises of passing trains, which greatly upset their visitors who have not learned that adaptation. Nurses and physicians have to become negatively adapted to many situations in order to remain calm and efficient in crises. They must also become positively adapted to the appropriate aspects of various sit-

uations in order to make correct diagnoses and to give effective help.

The learner tends to repeat those responses which bring a restoration or a continuance of a satisfying state of affairs; hence he becomes positively adapted to those aspects of the environment which evoke them. For instance, the young child soon learns that its mother, rather than other persons in the household, usually does the things which are pleasant and satisfying for it. Thus, the infant becomes positively adapted to the presence of its mother, and even to the sound of its mother's voice or footsteps in another room. At the same time, the infant becomes negatively adapted to any comfort-bringing associations with other members of the household. Thereby, an intricate pattern of differential behavior is set up towards persons around the youngster. To some persons, who infrequently appear in the nursery, there may be no apparent responses. At first, the infant may display signs of pleasure at the sight of any woman who resembles its mother. At length, however, it becomes positively adapted to one person and negatively adapted to others.

The first-grader who learns to read by the recognition method may at first confuse many words. For instance, any three-letter word may be misread as *man;* but eventually he learns that *m-a-n* is unlike other words, such as *ran, can,* or *pan.* To obviate the occurrence of continued errors, the teacher may show the letters *m-a-n* frequently below a picture of a man. Thereby, the young pupil is hastened along in his achievement of the proper adaptations, positive and negative. In all acts of learning the efficiency of the individual may be measured by the speed, the improvement in responses, the reduction of effort, the elimination of mistakes, or the ease of establishing the requisite positive and negative adaptations in the matter to be mastered. People differ greatly in their learning efficiency. For instance, some first graders learn to read quickly and easily the simple material in their books, whereas others have so much difficulty that they are required to repeat the grade.[4]

[4] The greatest amount of failure (about 30 per cent) occurs in the first grade. One reason for this situation is the fact that some pupils are too

Intentional and unintentional learning.—The school or the college is a controlled situation in which learners undergo a series of guided experiences in order to promote their intellectual growth. In this formal situation teachers are able to make use of purposeful methods to afford the learners whatever type of experience may be considered appropriate to enrich their experiences and to lead them into further educative experiences. In fact, the curriculum is nothing more than a formalized, organized series of experiences which are arranged in a definite, graded sequence.[5] Long before formal schools were established, however, mankind learned through experience. The school arose to meet the need for a controlled environment in which the learners' experiences might be purposefully guided. Consequently, it it fitting to think of the school as little more than an artificial, formal environment. Normally, learning takes place most efficiently when the individual has a felt need to make an appropriate adjustment to a real-life situation. Some modern educators, therefore, have criticized the traditional school for being excessively formalized and unlike real life. Hence they emphasize the need for altering the educational procedure so that the felt needs of the learners will be aroused and so that the work of the school will be closely related to actual life.

Unfortunately, learning has become identified with schooling; consequently, some people believe that learning does not take place in the absence of a teacher or without an intent on the part of the learner. To be sure, most of the important skills and understandings are the result of intentional learning. During the days of infancy, however, we had no awareness of how or why our behavior was being modified through the series of experiences we derived from contacts with our environment. Many psychiatrists are of the opinion that the learning which takes place during the

immature mentally, though they may be six years old, to learn to read. With present methods of teaching reading a mental age of six is necessary for successful work. (See Chapter X for a definition of mental age.)

[5] For a discussion of modern progressive education, see John Dewey, *Democracy and Education* (Macmillan, 1916). For a helpful commentary on this difficult but important text, consult H. H. Horne, *The Democratic Philosophy of Education* (Macmillan, 1932).

early part of the life span is influential throughout the entire life of the individual. Early reactions to frustrations, to pains and discomforts, to an ever-widening circle of people —these experiences have shaped our "style of living," and their effects upon us commenced at an early age. To be sure, the experiences of childhood are of profound importance in determining the type, the direction, and the scope of all subsequent experiences. Both practical and theoretical considerations, therefore, have led to a new emphasis upon the education of the child.

Practically, this fact has been repeatedly demonstrated by tracing the faulty adjustment patterns of adults back to childhood experiences. Theoretically, the psychoanalysts have observed that the early years of life are the golden time for the development of a wholesome basis for the personality. At this time of life the modifications effected in the behavior of the individual are largely beyond his immediate awareness. Furthermore, it is obvious that the learning of a young infant or child is not a matter of intent upon the part of the youngster. As a matter of fact, no one except a trained adult introspectionist ever tries to analyze his responses to each situation and to conjecture just how much he depends upon past experiences and how his subsequent behavior is affected. So far as the school is concerned, therefore, a great many important responses are learned "off stage."

Even in intentional learning, the individual is affected by many factors in the situation. For example, while a pupil is learning an assignment in history in order to meet an examination the next day, he may be learning to like or dislike the whole subject of history. Every phase of the experience has some effect upon his subsequent behavior, and that which may appear to be merely the incidental accompaniment of the activity may, later on, emerge as the most important aspect of the experience. In the modern progressive school, therefore, the teacher is concerned with much more than the routine task of presenting the curriculum. While she seeks to assist the pupils in mastering the various subjects, she also realizes that the learners are having broad experiences which lead to the formation of preferences, attitudes, ideals, and possibilities for further education. In

other words, the progressive teacher knows that the incidental, unintentional outcomes of learning are often of greater influence than the intentional learning is. Long after the facts have been forgotten, residues of the experience may remain to determine the direction and the quality of subsequent experiences. According to the progressive educator, a failure to understand this fact tended to make the traditional school rather ineffective and fruitless.

Some Important Facts about Learning

The dynamics of learning.—The individual encounters a new situation in either of two ways: first, he may respond to it as he has responded to a similar situation previously encountered; and, secondly, he may commence a trial and error sequence in order to find a suitable adjustment. When the individual has a ready-made response to a given situation, his behavior may be attributable to a reflex arc, a modified reflex, or a habit. For example, a response to an irritation of the nasal membranes is a sneeze—an unlearned, unmodifiable reaction. The response to the taste of a nauseous substance is an epigastric disturbance, and afterwards the mere sight or the odor of the substance may suffice to induce nausea. This type of response, to be discussed in more detail later on, is called a *conditioned response*. *Habit* is a broad term which includes learned reactions, such as driving a car, typewriting, spelling words correctly, or putting on one's clothes in the morning. In fact, any response that is learned is referred to as a habit. As a result of former experiences, we have prepared reactions for many situations which we encounter.

Habits are developed in the trial and error sequence of responses which are evoked by a new situation. When we meet a situation for which we have no prepared reaction, we make varied responses until the tensions have been reduced. By chance or by insight we discover a reaction that brings about a reduction of the imbalance, and this reaction may gradually become fixed as the habitual way in which to adjust to all situations of that general type. For example, the child whose desires for a new toy are denied may, then,

resort to cajolery, repetition of the demand, shifting to some other activity, or crying. Assume that the child finally has a temper fit, and that, to restore calm to the household, father and mother give in and buy the toy. Thereby, they predispose the child to resort to another tantrum next time he or she wants something.

In habit formation there are several recognizable steps. First, the learner must have a strong motive. Next, there must be a situation for which the individual has no prepared reaction. Thirdly, there is a trial and error sequence of behavior, which may be long or short and which may be guided or left to chance. Wise parents and teachers, of course, try to guide the child into the proper type of adjustment at this point. Fourthly, one response tends to reduce the tension and to bring about a restoration of the optimum complacency. As a result, therefore, this response tends to occur again when a similar situation is encountered. At length it may become fixed as the habitual type of behavior for a given situation. The school, as we have noted, is a controlled environment in which certain tensions are intentionally aroused and in which the learner is guided into the efficient way of reducing them. Nevertheless, the most important habits that make up the personality of the individual are seldom acquired in connection with the traditional curriculum of the school. On the contrary, these habits are chiefly the result of incidental and unintentional learning. Character is largely a product of incidental learning.

The conditioned response.[6]—One type of response should be clearly understood because it is of frequent occurrence in daily life. This is the conditioned reaction, a response to a situation which originally was not adequate to evoke it. For example, when a cat comes running every time the refrigerator door is slammed, it is making a conditioned reaction. This behavior is the result of a simple kind of learning. Each time the cat's food was taken out of the refrigerator, the door was slammed shut; and eventually, therefore, the noise becomes associated with food. A small boy once had to undergo a painful dental operation without anæsthetic,

[6] For a complete account of the conditioned response, see I. P. Pavlov, *Lectures on Conditioned Reflexes* (International Publishers, 1928).

and thereafter the sight of bright, shiny instruments seemed to terrify him. This was a conditioned reaction. This type of response is learned in either of two ways: first, there may be a repetition of two stimuli until the one which was originally inadequate becomes potent to evoke the response to the adequate one. Thus, in training a dog to lie down,

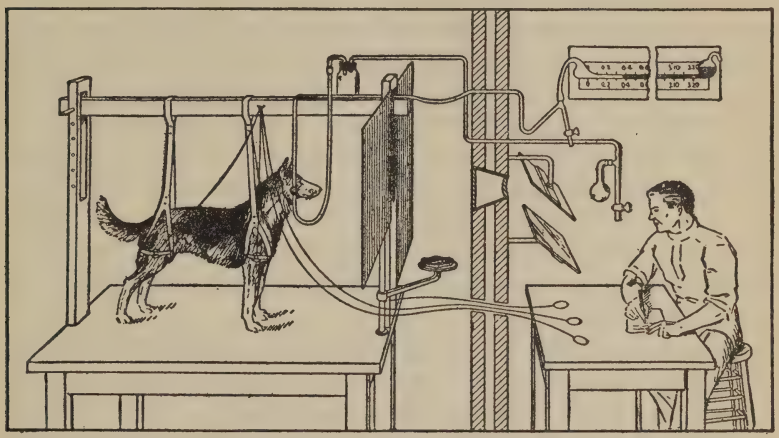

FIG. 50.—AN ILLUSTRATION OF PAVLOV'S ARRANGEMENTS FOR A CONDITIONED RESPONSE EXPERIMENT. The dog is fastened comfortably and securely in a soundproof room. A tube is attached to an exposed portion of the animal's salivary gland. Just before the food container is swung before the hungry animal's mouth, a buzzer is sounded. Finally, when the buzzer is sounded and no food is presented, the dog's salivary glands function. The *adequate stimulus* for the salivary response is the food, and the *accompanying stimulus* is the sound of the buzzer. This sound, at first merely an attendant condition in the environment, eventually becomes the *conditioned stimulus* to activate the salivary flow.

the owner makes the dog lie down as he says, "Lie down." After twenty or more repetitions, the command is sufficient to make the dog obey. Secondly, the inadequate stimulus may be presented in a highly emotional situation, and thus become associated with the reaction to the adequate stimulus. To illustrate, suppose that a youngster is punished with father's razor-strap for the first time. Thereafter when father reaches for the strap or even threatens to get it, the child may be frightened.

Mechanical types of responses, such as shifting gears in

the car or stopping at red traffic signals, are familiar examples of conditioned reactions. The "close order" drill which soldiers used to be taught is a good illustration of conditioning. When the commands were given, every member of the ranks made exactly the same response. Conditioning is, obviously, a mechanical sort of learning. Directive intelligence, purposeful adaptations to the environment, and insights are unnecessary in establishing a conditioned reaction. Circus animals are trained by the method of conditioning reactions. The "calculating horse" is conditioned to respond to slight cues given by its trainer. The "dancing bear" is trained as a cub by being placed on a sheet of hot metal while a piece of music is played. Held up on its hind legs, the bear lifts its paws alternately to ease the pain. Eventually, whenever the bear hears the repetition of the music while it is in the upright position, it lifts its hind paws. It has been conditioned.

A "hard-boiled" army sergeant once furnished a good example of a conditioned reaction. Addressing a group of recruits, he said, "When I blow this whistle, I expect to see a cloud of dust in the vicinity of those tents. When the dust settles, I expect to see you standing like rows of statues." A conditioned reaction may be unlearned, a process technically referred to as *experimental extinction*. For instance, a small boy conditioned his dog to adopt a menacing set whenever he said "Sic 'em!" At first he made this exclamation whenever a cat was in the vicinity, but after a while he could make the dog growl merely by saying, "Sic 'em!" Finally, however, his dog stopped noticing this command, the reason being that the boy did not reënforce the conditioned response by occasionally giving the order when a cat actually was present. Technically, the conditioned reaction was extinguished (experimental extinction). A familiar illustration is the story of the shepherd who summoned the villagers to his assistance by calling, "Wolf! Wolf!" Then he laughed at them. Finally, however, when he really needed help, his calls brought no one to his aid. He had extinguished the conditioned reaction.

Habit formation.—One of the most important chapters in the literature of psychology was written by William James

on the subject of habit.[7] This term is used to refer in a broad way to all learned reactions. More specifically, it is appropriately restricted to denote our interests, preferences, attitudes, traits of personality, or broad patterns of behavior. Whether we jump to conclusions or whether we think logically is, for instance, a habit. Some people have the habit of leading routine lives; others have the habit of being haphazard and impulsive. As a rule, the word *habit* is employed to designate any type of behavior, except the conditioned reaction, which is obviously learned. The term *conditioned reaction* is restricted to denote a mechanical, fixed, and unvarying type of learned behavior to a definite stimulus; whereas *habit* is used in a broader and looser sense.

James was greatly impressed by the moral aspects of habit, and he listed four principles of habit formation that have been repeatedly quoted ever since. If we would break an old habit or form a new one, we ought first, said James, to make a strong start. Let the drunkard sign the pledge in public; let the person who has decided to stop smoking announce that fact to the neighbors. Second, we should make no exception until after the old habit has been completely broken or the new one firmly established. In other words, James was skeptical about the advantage of "tapering off" if there is the slightest chance for success in making the break. Those who "taper off" usually "taper back," he observed. Thirdly, we should take the first opportunity to commence. If, then, the student has decided to "turn over a new leaf" and prepare each lesson, the time to start is right now. To make good resolutions and then not to act upon them is, of course, to form the habit of disregarding one's good intents. Finally, the new habit should be given plenty of exercise until it is firmly established. Thus, the student who has decided to spend the evening in study rather than in other pleasures should welcome an opportunity to decline invitations. The smoker who has determined to rid himself of the habit ought to seek the chance to decline the offer of a cigarette. As someone has said,

[7] Every student of psychology should read Chapter iv, "Habit," in William James, *Principles of Psychology* (Holt, 1890).

these four injunctions have furnished the theme for thousands of sermons. Even though they may seem to be trite as a result of constant repetition, they are worthy of careful thought.

Negative practice.[8]—Recently, James' second principle has been attacked in a novel, interesting way. An eminent psychologist had the annoying habit of misspelling a simple word. In exasperation, therefore, he wrote the word a number of times in the wrong way and repeatedly told himself that the error was absurd. As a result, he thereafter spelled the word correctly. This principle, called negative practice, has been successfully employed by a football coach. Hitherto he had stopped his players just as soon as they commenced to make a mistake, and then he had shown them the correct maneuver. As a result, his players learned two habits: the wrong one and the correct one. Now, however, he makes them continue the wrong way, and then points out exactly why it is wrong and lets them experience the disastrous outcome in their practice games. Therefore, the players unlearn the faulty habit and at the same time learn the right habit.

Negative practice works best with simple types of behavior, such as misspelled words, wrong form in athletic contests, or faulty pronunciations of words. Note that it is a technique for breaking up established habits, not a procedure for learning new ones. Note also that the learner must know exactly why the old habit is wrong and by what habit it should be replaced. This plan has been followed in the treatment of stutterers whose speech defect is functional rather than organic. The method is to require the individuals to stutter every word spoken during the training period. Thus they become conscious of the effort necessary to stutter and of the speech mechanisms involved in the act. The conventional treatment for functional cases of stuttering is, of course, to use James' second principle and to have the stutterers use a sing-song tone in which they do not become tense. As yet, it is too early to judge the merits of the negative practice technique in breaking up habits such

[8] See Knight Dunlap, *Habits, Their Making and Unmaking* (Liveright, 1932).

as stuttering. On a number of cases, however, this novel plan is said to have been successful.

The learning curve.—An interesting characteristic of the learning process is that the rate of progress in mastering some types of behavior can be measured. In golf, for example, the player is able to keep a record of his score from the day he first went out on the links up to the point where he reached his best level of performance. In learning how to

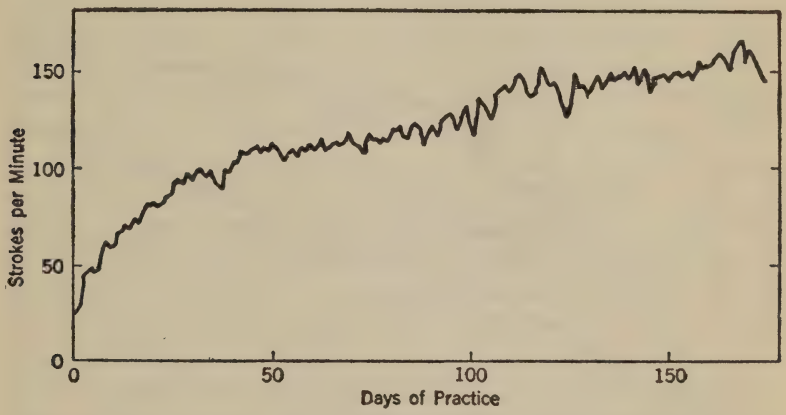

FIG. 51.—A TYPICAL LEARNING CURVE. This is the record of a young man who was learning to use the typewriter. Note the rapid improvement during the first part of his work, and then observe that he progressed more slowly. Note also the short-time fluctuations, represented by the peaks and the valleys. These fluctuations often discourage or temporarily encourage the learner who keeps a day-by-day record of his progress. From Book.

send or to receive messages in Morse code, the individual can keep a clear record of his rate of progress. Learning how to toss fouls in basket ball or to juggle three balls simultaneously are acts in which it is rather easy to keep a progress chart. Many studies have been undertaken in order to find out about the shape of the learning curve. In many types of learning the curve seems to be S-shaped and to show that there are diminishing returns from extended practice. In golf, for instance, the beginner makes rather rapid progress at first; then there is a period in which relatively little advance is made; and, finally, there is a slow rise to the golfer's maximum efficiency.

The rapid initial rise may be attributable to the fact that the learner has to master some easy skills at first. Possibly he has previously formed some habits which are useful in the new activity. For instance, a beginner in Latin can probably recognize many words because of the fact that familiar English words are derived from them. New tasks challenge our interest, and we work on them with heightened motivation. The novelty of a science laboratory may

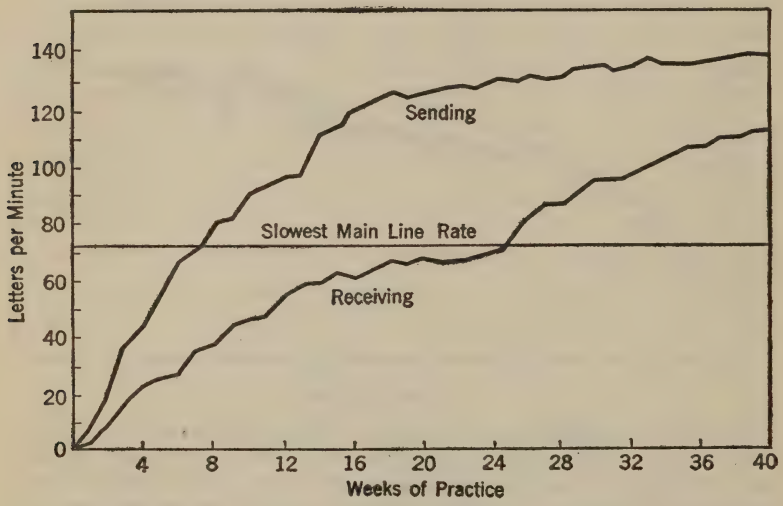

FIG. 52.—ANOTHER TYPICAL LEARNING CURVE. Note that the greater amount of skill was gained in sending messages in telegraphy than in receiving them. The explanation may be that the young student was able to organize the messages into meaningful units for sending, and that the task of receiving messages was a routine, mechanical act, at least until after the twenty-fourth week. From Bryan and Harter.

arouse the interest of the beginning student, and consequently the assignments may be eagerly studied. After a while, however, the new task loses its interest, and a degree of boredom sets in. Furthermore, one soon encounters many technical details which slow up the rate of learning. This phase of the experience is sometimes referred to as a *plateau* in the learning curve. Owing to loss of interest and to the increasing complexity of the task, the learner may be tempted to give up. At this point the wise teacher tries to appeal to many motives in order to keep the learner at the

task. At length, as one gains confidence and as the new habits become firmly mastered, there is a slow rise to the peak level of one's ability in a given task.

Of course, learning curves take many other shapes. For example, the curve may be concave, as in a task which is at first uninteresting but which takes on interest-value as the learner gets into the material. The new task may have been poorly presented during the initial phase of the learning periods, and hence the first experiences may have been bewildering and confusing. Later on, a good teacher or a series of new insights may have cleared away the confusion, and henceforth the rate of progress may rise. For instance, in elementary algebra there are many new concepts which perplex some pupils and greatly retard their progress. Individual diagnosis of their difficulties may, however, set them on the road towards a reasonable mastery of this subject. In some tasks the rate of progress may be in the form of an increasing mastery of the subject, from the first day until the individual has achieved his fullest degree of skill or understanding.

Motivation and learning.—Under the influence of strong motivation a person can learn a great deal more than he does when tasks are low in interest-value. For instance, the enthusiasm with which a car owner acquires skill in driving may cause him to make regular and rapid progress from the hour of his first lesson until the day of his examination for a license. When, however, he turns to the tiresome job of learning a school subject that he dislikes, his learning curve would take a different shape. One young man, unable to dance, acquired a fair proficiency in two four-hour lessons given on the day immediately preceding a junior prom. His enthusiasm was aroused by the unexpected acceptance of an invitation which he had extended to an attractive girl. The curriculum in school or college seldom arouses the remarkable amount of motivation which outside interests and enthusiasms often do.

Experimental investigations support the conclusion that learning does not take place unless there is a motive to acquire the new skill or understanding. In many cases, of course, the motivation is weak, and consequently the learning

is inefficient. One of the most important problems in dealing with children in the home or at school is to find out how to arouse the proper motives to induce them to learn, retain, and use the instructions which are given them. In the psychological laboratory, where studies are made to discover the facts about animal learning, a common procedure is to deprive the animals of water or food until a strong drive has been aroused. Then, when the animal is placed in a maze or a problem box, it tries hard to reach the reward (usually water or food). Needless to say, these strong motives cannot be used in educational work with human beings. As a result of the dependence upon weak and artificial motives, teachers are seldom able to induce pupils to learn efficiently.

Some important factors in learning.—In addition to motivation, there are several other important factors which influence the rate and the efficiency of the learning process. First, there is the matter of the individual's intelligence. From the standpoint of the teacher, intelligence is the capacity to master the skills and the understandings which are presented in the school. Individuals differ greatly in the amount of intelligence they possess. For instance, a few pupils in a class are able to extract square roots after a brief explanation, some can apparently never learn how to do this operation, and most of them require quite a little explanation and drill. When all individuals have an equal opportunity to learn a given subject and when they differ greatly in the ease with which they master it, they exhibit varying amounts of intelligence. For best results in learning, therefore, the tasks must be presented in such a way that the learner can understand them. Individual differences in intelligence must be taken into account.

A second important factor is the maturation of the learner. For instance, the normal child has not developed the neuromuscular coördinations for learning slant or semi-slant writing by the time of entrance into the first grade. Therefore, in progressive schools a type of manuscript writing is taught to primary-grade pupils. A well-trained music teacher knows that she must choose songs for young children that are suited to their voices; hence she takes into account their level of

maturation. Together with maturation there is the important factor of experience. Some studies presuppose a background of information as well as a certain degree of physical maturity. For example, one common reason for failures in modern languages is that the students do not understand English grammar. Consequently, they are unable to profit by the instructions given in their language textbooks. The efficient nurse must have an adequate background of experience in many studies; hence the educational standards have been raised for this profession. One cannot understand the pharmacopœia, for instance, without a good knowledge of chemistry.

Still another important factor is the learner's health, physical and mental. Although some investigations have shown that tonsils and adenoids do not appreciably lower intelligence,[9] the presence of remediable conditions is a handicap for the learner. Loss of sleep; sensory defects, particularly of the eyes or the ears; indigestion; aches and pains; malnutrition; and toxic conditions are examples of physical handicaps which are often encountered in schools. That they have a detrimental effect upon efficient learning is undebatable. For that reason school administrators and teachers are insistent that the community employ school nurses and physicians. Worries, faulty emotional habits, persisting daydreams, lack of friends, and feelings of inferiority are a few of the problems of mental health which interfere with efficient learning. For best results, the learner must find a real challenge in the work to be mastered, he must be confident that by hard work he can surmount the difficulties, and he must experience a measure of success as an outcome of his efforts. If such is the case, he is in a state of readiness to tackle more difficult tasks in the future.

Finally, an insight into the purpose of the work is an important factor in determining the efficiency of the learning. In school work, unfortunately, much of the work seems dry, meaningless, and uninteresting to many pupils. Conversely, when the task is related to the felt needs and purposes of the learner, he approaches the work with zest and

[9] G. M. Lowe, "Mental Changes after Removing Tonsils and Adenoids," *Psychological Clinic,* XV (1923), 92-100.

enthusiasm. Subject matter that can be related to former experiences and that is useful in the present adjustments of the learner is likely to be learned efficiently. A familiar device in learning unrelated items is to tie them together by a *mnemonic device.* This is an artificial way of integrating the material into a meaningful pattern. For instance, the student of neuro-anatomy may use the familiar jingle "On old Olympus' tipmost top . . ." to organize the names of the twelve pairs of cranial nerves. The history student uses *St. Wapniacl* to recall the officers in the President's cabinet (*S,* State; *t,* Treasury; *W,* War; etc.). At best, these are artificial and expedient ways of giving meaning to material otherwise without connection for the learner. Whenever possible, of course, the material should be integrated into our experience; and thus it will be remembered and used because of its purposeful value, not because of a nonsense device. People learn most efficiently when they have a strong motive and when they have a complete understanding of the reason why they need to master a given skill or develop a given understanding. Many of the laboratory investigations of the learning process have been criticized because they make use of material that few individuals in real-life situations would ever have occasion to learn.

Some Applications to the Art of Study

An application of some of the principles of the learning process will yield immediate dividends. Few individuals would express the opinion that they learn as efficiently as they want to, and most people can profit greatly by considering the value of applying some simple rules to their own habits of work. These common sense principles are based in part upon laboratory studies and in part upon the experience of other students. Most adults have been studying for many years, but frequently they have not been very efficient, have not employed the right habits, and have not seriously considered the advisability of making some improvements.

Physical conditions.—When motivation is strong and the learner has a good constitution, a great deal of work may be done under adverse conditions. Poor light, bad ventilation,

extremes of temperature, and excessive dryness of the air are decidedly bad conditions for health; and they may prove detrimental to one's learning efficiency. Even when the motivation is high enough to nullify some of their effects, nothing is gained by permitting these conditions to remain if anything can be done to alter them. Of course, most students have to learn to concentrate in surroundings that are far from ideal. Since a great deal of work in hospitals, schools, and offices must be done under distracting influences, there is a real advantage in becoming negatively adapted to them. On the other hand, some of the distractions may be removed, and thus the student is able to devote to the task to be learned some of the energy which otherwise would be expended in counteracting them.

It is important to pay attention to the illumination in order to see whether eyestrain may be reduced. For most students a room temperature of 68° to 70° F. is best for intellectual work. When the windows are closed, as during winter months, it is important to use some device that will raise the humidity of the room. Even a pan of water on the radiator is often sufficient. The clothing should be comfortable, and the chair and study table should be of proper size. Contrary to the practice of many students, best intellectual work is seldom done while the student reclines in an easy chair. It is preferable to sit erect in a straight-back chair. In fact, experience shows that we do our most effective intellectual work when there is a slight degree of bodily tension, not when we are completely relaxed. All materials, such as paper, pen or pencil, reference books, and a dictionary, should be within easy reach.

Getting started.—It is all too easy to acquire the time-wasting habit of spending fifteen or twenty minutes in getting settled for work. By judicious management, the student should be able to form the habit of commencing at once. A regular schedule and a place-study habit are to be recommended. For one who has difficulty in getting down to work, a helpful suggestion is that the study table be used for no other activity. Thus, the sight of the table and the study materials becomes associated with the habit of industrious work, and not with the pursuit of some hobby or

other activity. If a paper is to be written, it may be worth while to commence writing on anything, should the ideas not come readily. Some students waste a long time sitting before the table while they wait for "ideas to come." In order to start up the train of mental processes, it may be better to begin at once to write, and then to guide the mental activity into the desired channels, rather than to search for ideas in thin air.

The ideal for which one should work is to increase personal efficiency in study. The efficient student expends less effort and a shorter time in study than the inefficient one does, and at the same time accomplishes more. By paying attention to their habits of getting started on a task, many persons have discovered a number of wasteful practices which had hitherto escaped their notice and which could be replaced by efficient habits.

The mental attitude.—Every study manual recommends the importance of getting the proper mental set or attitude for study. First of all, the learner must appreciate the fact that the work is not to be done merely to please the instructor or to meet a formal requirement. If the material is worth learning at all, it has an important contribution for the enrichment of the experience of the student. Consequently, the learner should find out what is the purpose of the assignment, why it has been made, and what it will contribute to subsequent experiences. In the next place, it should be learned with the intent to remember and to apply it. School subjects are of two types: those which have a direct relationship to the felt needs of life, and those which prepare the student to master other studies which do have that relationship. Just what is the purpose of each assignment the student must find out. Thirdly, the efficient student is constantly aware of the goals for which he or she is striving. Consequently, intellectual work is taken seriously enough to be the major concern in the life of the individual. Of course, every student should be advised to find outlets in recreational activities, but for the individual who has worthy goals these recreations are not the sole pursuit in life.

Whole and part learning.—Many investigations have established the fact that it is better to learn by the whole

method than to break up the material into fragments. Unless the assignment is unusually long, therefore, it should be read over as a whole at the start. In that way the student is able to note the relationships among the various parts when they are studied intensively. In general, if there is some material that has to be learned by rote, it is preferable to use the whole method. If there are a great many items, they may be broken up into meaningful parts, and then the parts may be organized into a whole again. The important point is to find some meaningful relationships among the various elements in the assignment, and thus to integrate it into the experience of the learner.[10]

A common mistake of many inefficient students is to read the material over dutifully, even to underline passages or to copy them down in a notebook. That procedure gives the student the feeling that the material has been mastered; but when an examination is given, this procedure usually results in disaster. A more sensible plan is for the student to put the material into his or her own words, and thereby to integrate it with former experiences. Once the material has been expressed in the learner's own words it is likely to be retained. This method, of course, is not applicable when material has to be mastered by rote, although in many cases it does facilitate the recall of such material. Fortunately, in modern education the amount that has to be learned by rote is relatively small. In general, the aim is to help the learner to understand the whole unit of material and to integrate it with other experiences. Dependence upon the method of learning isolated parts by repeating them over and over, therefore, defeats the purpose of modern education. The recommended procedure is to look the whole assignment over carefully, next to fit the parts into a meaningful whole, and finally to pay particular attention to the parts which are especially difficult. In the summing up at the conclusion of the study period, the learner may well ask the question, Just what has this assignment as a whole contributed to me

[10] The relative advantages of the whole versus the part method have been investigated by many experimenters. One investigator (A. B. Hoskins, "The Effectiveness of the Part and the Whole Methods of Study," Peabody College *Contributions to Education,* CLXXXIX [1936] reports that for mature, industrious students the methods are equally effective.

personally, how does it relate to my former experiences, and how can I use it hereafter?

Review and overlearning.—Research has shown that we forget relatively the greatest amount in the first day or so after we have learned something new. To counteract this loss, therefore, the material should be reviewed within a day or so. It is a serious mistake to wait until the night

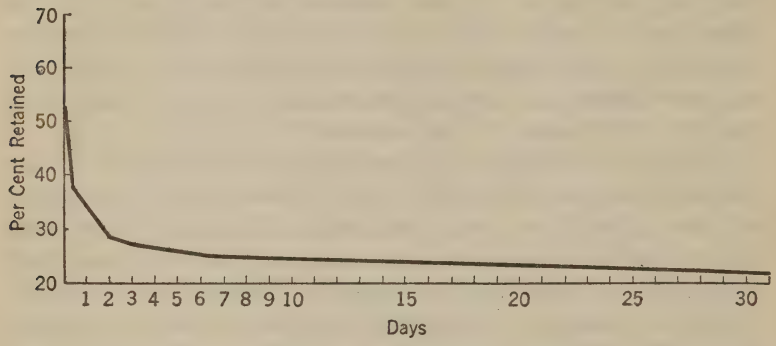

FIG. 53.—A TYPICAL CURVE OF FORGETTING. The curve takes this shape when material, to be mastered verbatim, is learned to the point of a single correct reproduction. To counteract the loss, therefore, two things must be done: overlearn, and have frequent reviews during the first week. This curve shows that last-minute cramming before examinations is seldom advantageous, for material learned perfectly the night before may be forgotten on the next morning.

before an examination to commence reviewing. In the case of difficult material, it is well to review the work the next day, then three or four days later, and finally at the end of a week or so. *Overlearning* means the continuation of the study beyond the point of a single correct reproduction. If, for example, the student is learning the names of the muscles of the neck, they may be repeated over and over beyond the point of a single recital. This is overlearning. When a meaningful assignment is restated several times in different words, it is being overlearned. This practice tends to reduce the rate of forgetting.

Self-study will show that most of us have little reason for saying that we have poor memories. Of course, we are bothered by the fact that we lose track of names, that we cannot recall information in examinations, and that we are

frequently embarrassed by our inability to recollect facts. The usual explanation, however, is that we never adequately learned the material in the first place. In other words, we have not forgotten, but we never did know the material. Observe how a shrewd politician or salesman repeats the name of a person to whom he is introduced. He uses the technique of overlearning. By establishing some meaningful association between the name and the appearance of the individual, he makes certain that he will not fail to recall the name when next he approaches the individual for a vote or a sale.

Spaced versus undistributed practice.—Both laboratory studies and experience have established the fact that it is better to space out the learning periods than to study continuously on one assignment. In other words, if an assignment involves careful attention to details, the student will master it better if several short periods are allotted to the work than if one long, continuous period is taken up with the task. Obviously, by distributing the learning periods, the student is given more practice in reviewing the material. There is also some likelihood that the material will be frequently applied if the periods are spaced; whereas if only a single period is given to the work, there may not be even one application. This recommendation should not be taken too literally, however, for some investigators have found that massed practice is much superior to distributed periods when the material is meaningful.[11] Nearly all experimenters agree that spaced learning periods are to be recommended when the material has to be learned by rote. This distribution of practice is called *pacing*.

There are a number of excellent manuals dealing with the art of study.[12] Most of them include an admixture of common sense advice and experimental findings about the learning process. Apparently regarding these study rules as a "royal road" in education, some college and school administrators have been experimenting with how-to-study courses,

[11] For example, see T. W. Cook, "Massed and Distributed Practice in Puzzle Solving," *Psychological Review*, III (1934), 330-335.

[12] One of the best is an inexpensive manual by A. W. Kornhauser, *How to Study* (University of Chicago Press, 1924). A good book for mature students is M. G. Riggs, *Making Good in College* (Thomas Nelson, 1931).

which they sometimes require of failing students. The results are somewhat disappointing.[13] Intelligent students who have a serious interest in self-improvement do gain by discovering their inefficient study habits and in correcting them. Dull learners who are uninterested in self-advancement gain almost nothing from a required course in study methods. On the other hand, dull learners who are earnest about improving their status are oftentimes greatly benefited by the individual guidance which they receive in such a course. In the following chapter there is a discussion of various mental and educational abilities, together with an account of the ways in which they are measured.

QUESTIONS AND EXERCISES

1. Answer the following questions as concisely as you can:
   a) Do I have a regular program of work, study, and play?
   b) Do I seldom deviate from the plan of setting aside a regular period for study?
   c) Do I skim over the assignments first in order to get a preview, and then study the details intensively?
   d) Do I look up new and unfamiliar words in the dictionary?
   e) What is my habitual practice when I encounter a graph or a table in my reading?
   f) Do I ever make original graphs, charts, or mnemonic devices? When? Are they helpful?
   g) Are my class notes arranged in a neat, orderly fashion?
   h) How long does it take me to settle down to study? In other words, how long is the "warming-up" period?
   i) Can I reduce this time appreciably? How?
   j) Do I try to study with the radio going?
   k) If I have eyestrain, have I consulted an oculist recently? Is the lighting good? How about the ventilation and other physical conditions of the room?
   l) Must I wait until the mood strikes me before I study?
   m) How frequently do I review? Do I know what is meant by selective review?
   n) Does the mere thought of a quiz get me emotionally

[13] Individuals, whether failing students or other people, differ greatly in their habits. The broadside treatment given in the average how-to-study class contributes little to the diagnosis of the inefficient habits of the individual or to the matter of effecting an improvement. Clinical studies, rather than group treatment, are more likely to get at the basis of the student's difficulties.

upset? Why? Am I habitually unprepared, or is my emotional disturbance an alibi for possible failure?

o) Do I seek to relate new facts to information I already know?

p) Does my mind wander frequently? Of what do I think when I cease to concentrate upon my work?

q) Do I frequently analyze my study habits in order to find out whether I might become more efficient as a student?

r) Do I have the habit of copying down verbatim the statements of lecturers or in textbooks? Can I express these thoughts in my own words?

s) Am I a slow reader? Would I benefit by forcing myself to read more rapidly for a while?

t) Do I habitually attempt to integrate new knowledge into what I have learned in other courses, through my reading, and by personal experience?

By making honest answers to these questions, and then locating the "weak spots," you will be interested in giving yourself some training in self-improvement for a month. After that period, answer the questions again and note whether you have made any gains in study skills.

2. If you have ever owned a pet dog or a cat, tell how you taught the animal some tricks. Did the animal learn some habits which you did not teach it? How do you account for the appearance of these habits?
3. From your personal experience, can you give some examples of learning by trial and error?
4. Give some original illustrations of learning by insight. Do you believe that animals are able to learn by this method? Can you give any examples?
5. Find some original examples of negative and positive adaptation.
6. Which type of learning is the more important for mental health, deliberate or unintentional (concomitant) learning? Why? Do we deliberately set out to learn to be mean, jealous, stingy, or impatient? How do we acquire habits of that sort?
7. There is an old proverb to the effect that "practice makes perfect." Is it true that repetition is the important factor in learning? How would you amend this proverb?
8. It has been said that if we could learn by no other method than that of the conditioned response we would be robots, not human beings. Is that a valid opinion? Explain.

9. Give some examples of conditioned responses in animal and in human behavior. How would you recondition a child that is afraid of the dentist?
10. What is the danger of making good resolutions, and then not acting upon them?
11. Did you ever try to apply James' principles in breaking a habit, such as smoking or wasting time? How did the technique work?
12. Take a pencil in your non-preferred hand (the one you do not write with) and, while making the motions of writing your full name with the other hand, let the pencil move in the opposite direction. Hold the result before a mirror. Keep practicing until you can sign your name clearly and legibly backwards. By timing yourself in each practice, you will secure the figures for a learning curve. What is the shape of the curve? Why does it take this shape? What is your speed limit? How does it compare with the time for writing your name with the preferred hand?

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CHAPTER X

MENTAL AND EDUCATIONAL ABILITIES, THEIR NATURE AND MEASUREMENT

Until recent years, many parents and teachers believed that people are fundamentally alike. When, for instance, a child did not learn readily in school, they considered him to be perverse, heedless, or non-studious; hence they often stimulated the maladjusted pupil through the use of corporal punishments. In short, the traditional view was that anyone could learn practically anything if he would only apply himself to the task. One of the first investigators to challenge this opinion was Sir Francis Galton, who asked a number of his eminent contemporaries about their ability to produce mental images.[1] Some people, he discovered, are able to get mental images which are almost as clear as perceptions; others are unable to secure any image at all. This pioneer investigation opened a new chapter in psychology; and since Galton's time, a great deal of work has been done to determine the nature and the cause of individual differences.

The Nature-Nurture Controversy[2]

The arguments for inheritance.—What is the cause for individual differences? That question has for a long time been debated heatedly. People who have gained for themselves positions of wealth, leadership, or special advantage have through the ages claimed that they are superior to others. Hence they have sought to transmit their own fortunate status to their children. Through the use of vari-

[1] See F. Galton, *Inquiries into Human Faculty and Its Development* (Macmillan, 1883).

[2] For a concise review of many studies on the relative importance of heredity and environment, see G. C. Schwesinger, *Heredity and Environment* (Macmillan, 1933). An important reference is H. S. Jennings, *Biological Basis of Human Nature* (Norton, 1930).

ous techniques, the assumption of titles, and the establishment of caste lines, they were able to establish an aristocracy (literally, the rule of the best). Thus, the advantages which they conferred upon their descendants were supposed to rest upon the special favor of Providence and upon a superior biological inheritance. In a sense, history represents an age-long struggle between the "have-nots" and the "haves" in some form or other.

Three important books are frequently quoted (though seldom read) to support the argument that heredity is the predominant factor in producing individual differences in abilities. The first book deals with a "wild boy" who was found in a forest near Paris, France.[3] The savants gave the lad into the keeping of a physician who was to educate him, and thus demonstrate to the skeptical world that Rousseau, Condillac, and other philosophers of the Revolution were right in saying that differences among mankind are the result of disproportionate educational opportunities. The physician worked hard to domesticate the boy and to make him a genius. Nevertheless, as Pinel had predicted at the outset, the lad was unable to advance very far, even under the expert tutelage of Dr. Itard. Probably the "wild boy" was a low-grade imbecile who had wandered off into the woods. The fact that the boy did learn anything at all was enough to interest several humanitarians in commencing educational work with the feeble-minded, a phase of educational work which has greatly improved during recent years.

The second book was written by a young man who traced the descendants of a man called Max Jukes, who was born about 1730 and who was the progenitor of over five hundred social misfits in the five succeeding generations.[4] This study, made by Richard Dugdale, was quoted with approval by Galton. Those who mention the Jukes family to bolster up the argument for heredity may have overlooked the fact that the foreword to the book was written by Giddings, the foremost advocate of the theory that environmental opportunities

[3] J. G. M. Itard, *The Wild Boy of Aveyron,* translated by G. and M. Humphrey (Appleton-Century, 1932).

[4] R. L. Dugdale, *The Jukes* (Putnam, 1877). See also A. H. Estabrook, *The Jukes in 1915* (Carnegie Institution, 1916).

are the principal cause of human differences. Throughout his report, Dugdale emphasizes the meager educational advantages and the poor environment of the Jukes family. Dugdale advanced the conclusion that the unsocial behavior acquired in one generation of the Jukes group was inherited by the next. Such a view, of course, is now untenable. Yet the fact remains, Dugdale's report is an excellent argument for improved education and community welfare rather than a support for the fatalistic view that personality is completely limited by heredity.

A classic study, which definitely attributes the cause of differences to heredity, is the story of the Kallikaks (*kallos,* good; *kakos,* bad).[5] Goddard traced a family back five generations to a soldier in the Revolutionary Army, whom he named Martin Kallikak. While a soldier, this man had an illegitimate child by a servant girl, presumably feeble-minded. After the Revolution he married a girl of good family. Therefore, there are two lines of descent from Martin Kallikak. On the "bad" side, Goddard traced four hundred eighty offspring, only forty-six of whom are said to have been normal. On the "good" side, there were four hundred ninety-six descendants, none of whom turned out badly. Therefore, the author concluded, heredity is the determining factor in the formation of human nature.[6] His conclusions have been challenged by later investigators.

The arguments for environment.—Much more congenial to those who live in a democracy is the view that varying opportunities are the principal cause of differences of human abilities. You may recollect the slogan of Wat Tyler's rebels against the feudal lords of England:

> When Adam delved and Eve span
> Who then was the gentleman?

Those who uphold this argument have often been just as unscientific and emotional in their thinking as have those who supported the opposing view. Much of the literature on each side, therefore, has little value for the psychologist

[5] H. H. Goddard, *The Kallikak Family* (Macmillan, 1912).

[6] Heredity is now believed to be a causative factor in feeble-mindedness in less than 30 per cent of the cases.

who seeks for a scientific answer to the question, What is the cause for individual differences?

Three important objections have been raised against a literal interpretation of the Kallikak study, and these are worth considering. First, it is objected, we are unable to go back four or five generations and say that certain individuals were feeble-minded, demented, or social misfits. There is too much dependence upon hearsay evidence and community gossip. It is true that some Kallikaks acquired an ill-favored reputation in their community, and it is likely that the rest were judged too harshly as a result. Secondly, it is impossible to trace human inheritance back through five generations. In each generation new admixtures are introduced; hence the problem of tracing heredity becomes infinitely complicated. In other words, heredity does not move in a straight line, as from Martin Kallikak down to the present; but it goes in checkerboard fashion. New unions were contracted, and new hereditary factors were constantly being introduced. Thirdly, these family studies, once very highly regarded by psychologists and educators, are now being criticized because of some important omissions. We do not have a record of every descendant in the families. We should know what all the thousands of Jukes and Kallikak descendants are doing today; instead, we hear only about the bad ones. Possibly, say the critics, we might find many descendants living normal, useful lives. In short, before we can dogmatically state that certain individuals are victims of a blighting heredity, and that others are highly favored through good inheritance, a great deal more scientific information is necessary.

An important experiment.—A welcome relief from these speculations and controversies is the report of an experiment conducted by the Kelloggs.[7] When their son was about ten months old, they "adopted" a chimpanzee that was seven and a half months of age. In every way, the parents tried to treat the two infants exactly alike. Gua, the chimpanzee, sucked her thumb, rubbed her eyes when sleepy, sighed with relief when some trouble had been overcome, and even ran

[7] W. N. and L. A. Kellogg, *The Ape and the Child: a Study of Environmental Influence upon Early Behavior* (McGraw-Hill, 1933).

gleefully to met her "parents." When she had to be punished, she sought for a kiss of forgiveness. In short, she behaved in a remarkably human manner.

The greatest difference between the two was that Gua matured more rapidly during the nine months of the experiment. She was very precocious in learning how to walk, to climb into her high chair, and to jump up on the furniture. It is remarkable to learn that she became interested in looking at picture books and in pointing out details long before the boy did. Also she could eat with a spoon four months before the boy was able to use it. In many respects Gua was "more human" than the child. In spite of the speedy development of Gua, however, the boy possessed inherited capacities which finally carried him to heights which Gua could never reach. For example, the chimpanzee never learned to use more than four "words," some of which were emotional cries indicative of her inner tensions, yet she could *respond* to more words than the boy. It became obvious that heredity imposed *limits* and *rates* in development and that the environment merely provided some *direction* to them. The important conclusion is that both heredity and environment were influential in producing the differences between the boy and the chimpanzee but in this instance the heredity factor is weighted.

Studies of twins.[8]—It is clear that if a pair of twins differs greatly in psychological traits, then environment has been the more potent factor; but if they resemble each other closely, even though they have been separated for years, heredity is more important. Therefore, many psychologists have become interested in the study of twins. Here once more Galton took the lead, and from eighty replies to a questionnaire he obtained material for an anecdotal report. The first scientific investigation was made by Thorndike in 1905,[9] and subsequent reports by other research workers have, in general, confirmed his findings. On six mental

[8] See H. H. Newman, *The Biology of Twins* (University of Chicago Press, 1917). See also Newman, "The Effects of Hereditary and Environmental Differences upon Human Personality as Revealed by Studies of Twins," *The American Naturalist,* LXXVII (1933), 193-198.

[9] E. L. Thorndike, "Measurements of Twins," *Archives of Philosophy, Psychology, and Scientific Method,* I (1905).

tests, he found the performances of pairs of twins are much more closely in agreement than are the scores of ordinary brothers and sisters. Subsequent investigations of twins have made use of elaborate statistical techniques and a more extensive testing program, but most of these studies add little to Thorndike's original investigation. The general conclusion is that the similarities are due to heredity and that, when differences in performances do occur, the tests are measuring traits which depend primarily upon interest patterns, preferences, or training.

It is necessary, however, to take an openminded attitude, since there are many controversial issues which have not yet been settled. Obviously, there are many factors which are difficult to control in the measurement of mental abilities. In a recent study by Newman, Freeman, and Holzinger one hundred pairs of twins reared together and nineteen pairs of identical twins reared apart were examined for likenesses and differences.[10] Ranked in order of degrees of resemblance, the traits are as follows: physical traits, general ability, achievement, personality, and temperament. In other words, individuals who have a close family relationship are most alike in such traits as appearance, height, strength, or weight; and most unlike in traits like neurotic trends, introversion-extraversion, or aggression-submission. They also found that where environmental differences are large, test performances differ greatly; and yet when individuals of different heredity were compared, the contribution of heredity seems to be an exceedingly important factor in determining likenesses and differences. This important study should be emphasized, for it is a wholesome corrective of the tendency to dogmatize about the nature-nurture problem.

Foster children.—Burks made a significant investigation of the effects of foster homes on the intelligence of adopted children.[11] In rare instances, she reported, a good foster home may raise, and a poor one lower, the intelligence

[10] H. H. Newman, F. N. Freeman, and K. J. Holzinger, *Twins: a Study of Heredity and Environment* (University of Chicago Press, 1937).

[11] B. Burks, "The Relative Influence of Nature and Nurture upon Mental Development," *Twenty-Seventh Yearbook of the National Society for the Study of Education,* I (1928), 219-316.

quotient by as much as twenty points. The average result of a good home, according to this study, is to lift the intelligence quotient by about seven points. She concluded, therefore, that heredity accounts for 80 per cent of the intelligence of the child, and that a good environment simply gives a chance for the development of inherited capacities. This conclusion, however, has been challenged by Freeman [12] and by Wellman.[13] In a study of about four hundred foster children, Freeman found that a good home raises the intelligence quotient about five points, but that a poor home does not lower the intelligence level. Other studies confirm the hypothesis that young children adopted into a better-class home tend to gain in intelligence test scores. It should be pointed out that children who are feeble-minded are practically never offered for adoption. For normal children, it may be safe to conclude, superior environment will definitely raise the level of their rated intelligence. Nevertheless, there is no reason to assume that a good home status for all children will iron out individual differences.

Race as a cause for differences.—An enormous amount of literature deals with the possibility that race is an important determinant in producing individual differences. From the results of the testing program of the United States Army during World War I many inferences have been drawn. Note, for example, the distribution of scores according to the place of birth of the soldiers:

Country of Birth	Per Cent High Scores	Per Cent Low Scores
England	19.7	8.7
Holland	10.7	9.2
Germany	8.3	15.0
Turkey	3.4	42.0
Poland	0.5	69.9

[12] F. N. Freeman *et al.*, "The Influence of Environment on the Intelligence, School Achievement, and Conduct of Foster Children," *Twenty-Seventh Yearbook of the National Society for the Study of Education*, I (1928), 103-217.

[13] For an excellent bibliography of the challenging views of Beth Wellman and of critical evaluations of her conclusions, see the *Psychological Bulletin*, XXXVII, No. 2 (February, 1940).

The scores were obtained on a test requiring facility in the use of English. Consequently, foreign-born men were handicapped at the start if they were not fluent in their use of English. Directly after the War, ill-founded, hasty judgments were made about the comparative status of races. For three reasons, these invidious comparisons should be questioned. First, measures of mental ability appropriate for people of one type of background are not necessarily applicable for use with those who have a different cultural patterning. Secondly, the racial groups may not be representative of the whole race. Many underprivileged immigrants came to America to find opportunities that were denied them in Europe; hence they may not have had the advantages of a cultural tradition in their families. Thirdly, the language handicap is a big obstacle in efficient test performance. Of course, the persistent objection to these studies is that the term *race* cannot be precisely defined.

A great many investigations have compared white and colored school children. In general, these studies are not distinctive for their dispassionate scientific thinking; on the contrary, many of them are prejudiced and full of the "Aryan superiority complex." One expert [14] who has made a scientific analysis of all the important reports on race and individual differences came to the conclusion that the most significant finding is that all mankind, no matter of what race, is a "psychical unity."

The one important factor which produces individual differences is the variations in the experiences of people. What a tremendous effect past experiences have upon present behavior is not generally appreciated. In a broad sense, no experience is ever forgotten; it is incorporated into the total experience of the individual, and thus determines the direction of all subsequent experiences. Heredity, of course, sets the limits on the extent to which an individual may profit by experience, but environment determines the quality and the direction of his experiences. Except for feeble-minded individuals, the extent to which human beings may be improved by guided experiences is as yet unrealized. The

[14] See A. Goldenweiser, *Anthropology* (Crofts, 1938). See also, T. R. Garth, *Race Psychology* (McGraw-Hill, 1931).

whole spirit of the modern school and of community welfare activities is to raise the status of boys and girls. The extent to which the level of performance of the normal young person can be lifted through guidance and instruction has not been determined. For that reason it is well to avoid taking the fatalistic view that heredity is the prepotent factor in determining individual variations in achievement.

The trend at the present time is to account for individual differences in terms of environmental opportunity, and only as a last resort to conclude that nothing can be done to improve the status of a given individual. Formerly, psychologists and social workers were somewhat hasty in blaming failures upon a poor heredity. Of course, a blind optimism is equally absurd. Environment cannot work miracles. On the other hand, in dealing with human beings teachers, clergymen, nurses, and social workers can do nothing to alter a given individual's inheritance, but they may improve his level of attainment by guiding his experiences.

Intelligence and Its Measurement

What intelligence is.—Intelligence is defined in various ways. The teacher considers a learner intelligent who can master the school curriculum and an Army officer considers a private sufficiently intelligent if he can understand, remember, and carry out orders. In choosing a person for an important executive position, a board of trustees might define intelligence as the ability to meet new situations and requirements with an appropriate plan of action. A layman might define it as common sense or as the ability to profit by past experiences. Frequently, parents judge the intelligence of their children by noting their interest in, and curiosity about, things. From the standpoint of a scientist, intelligence might be defined as the ability to arrive at valid conclusions. With all these definitions the psychologist is in agreement. *Intelligence* is a word with a broad connotation that cannot be summed up in a brief sentence definition. If, however, a definition is insisted upon, intelligence may be called the ability to adjust to a new situation by making the best use of past experiences.

How tests of intelligence were developed.[15]—The first tests of intelligence were developed to meet a practical need. In 1904 the Minister of Public Instruction in France appointed Binet, a psychologist, and Simon, a physician, on a commission to investigate school retardation. They were asked to find out whether failures were due to dullness, to poor instructional techniques, to indifference, or to some other cause. To answer the question, Binet and Simon devised a test based upon the observable fact that children mature in mental ability as they increase in chronological age. They were not interested in theorizing about the nature-nurture controversy, but they did try to develop a scale which would indicate the rate of growth in mental ability.

They proceeded as follows: First, they collected a number of tasks ranging in degree of difficulty from very simple to extremely hard. Secondly, they gave these tasks to a great many children of various chronological ages. Thirdly, they eliminated all the tasks that did not differentiate among children of various ages. If, for example, a task was as easy for six-, seven-, and eight-year-olds, they discarded it as unsuitable. If it could be performed satisfactorily by a majority of children at, say, age seven, by a minority at age six, and by practically all at age eight, then they retained the task in their scale. Finally, they organized a series of tasks at chronological age levels from age three to adult. Their procedure, then, was to apply the scale to a given pupil, and thus to compare his status with that of other pupils at various chronological ages. These relatively simple principles have been used by many other psychologists who construct mental tests. The following illustrations, from the 1908 Binet Simon Intelligence Scale, will indicate the plan of the test:

Age Seven

1. Tells what is left out in unfinished picture.
2. Tells the number of fingers on each hand and on both hands without counting them.

[15] See Joseph Peterson, *Early Conceptions and Tests of Intelligence* (World Book, 1925).

3. Copies a story in pen and ink.
4. Copies a diamond in pen and ink.
5. Repeats five digits.
6. Describes pictures.
7. Counts thirteen pennies.
8. Knows the names of four common coins.

Age Eight

1. Reads a passage and repeats two ideas.
2. Counts up the value of three single and two double *sous*.
3. Names four colors.
4. Counts backwards from 20 to 0.
5. Writes a short sentence from dictation, using pen and ink.
6. Tells the differences between pairs of objects mentioned.

Age Nine

1. Knows the date (within three days of the month).
2. Recites the days of the week.
3. Solves problems in making change.
4. Defines common objects in terms superior to use.
5. Reads a passage and repeats six ideas.
6. Arranges five blocks in order according to their weight.

The work of Binet and Simon was interrupted by the untimely death of Alfred Binet; but many other psychologists, principally the American group, have continued to develop and perfect his plan of intelligence measurement. Most widely used at the present time is the Terman-Merrill Revision of the Binet-Simon Scale (also called the 1937 Stanford Revision).[16] It is important to bear in mind that these intelligence tests are given individually by competent psychologists. They yield scores which must be expertly interpreted. In a sense, the giving of a Binet-type test of intelligence is a standardized interview in which the judgment and experience of the examiner play a large part.

Mental age.[17]—If an individual makes a score that is equivalent to that obtained by the average person of a given

[16] L. M. Terman and M. A. Merrill, *Measuring Intelligence* (Houghton Mifflin, 1937).

[17] For an excellent discussion of the meaning of mental age and IQ, see David Wechsler, *The Measurement of Adult Intelligence* (Williams and Wilkins, 1939), chap. iii.

chronological age, then his mental age is said to be at this level. In determining mental age, the examiner (using the Binet-type procedure) begins at a level on which the subject can pass every item, and then continues the testing until all items in a given age range are failed. Here, for instance, is a record on the Terman-Merrill Revision:

Year XIII	all passed, basal age 13 years	
Year XIV	4 items passed (2 mos. each)	8 months
Average Adult	4 items passed (2 mos. each)	8 months
Superior Adult I	2 items passed (4 mos. each)	8 months
Superior Adult II	1 item passed (5 mos. each)	5 months
Superior Adult III	0 items passed	0
Mental Age Score	15 years,	5 months

The mental age score is, then, merely a convenient way of expressing the degree of success attained by the subject. It is more meaningful than a score expressed in terms of letter grades or percentages, but it does not have any mysterious significance. It is obvious that an individual's mental age may vary with the test by means of which it is determined. This is an important point to understand because there is a tendency to regard mental age as something which is difficult to comprehend. As a matter of fact, it is merely a score on a given test. Well-trained psychologists always preface the mental age by giving the name of the test on which it was determined.

Mental growth and the general rate of development seem to parallel each other, with relatively large increments during the early years of life, and then the increments gradually decrease until, in late adolescence, as some believe, or into the twenties (or possibly into the forties or fifties) when the maximum is reached. The maximum mental age may be attained at different ages by different individuals. Some seem to reach the maximum as early as fifteen or sixteen. At age thirteen there is a pronounced tendency for success on Binet-type tests to level off. Two reasons have frequently been cited to account for this phenomenon. First, it has been said that the impetus of heredity has ceased to exert its effect by the time of late adolescence or early adulthood.

In other words, just as physical growth reaches its ultimate development at this time of life, so does native capacity or intelligence. Secondly, it has been pointed out that our Binet-type tests are made up of items drawn from a common environment, and that by the time of thirteen or fourteen

FIG. 54.—ASK SOME CHILDREN WHO ARE ABOUT FOUR, FIVE, SIX, AND SEVEN YEARS OF AGE TO TELL YOU WHAT IS MISSING IN EACH PICTURE. YOU WILL PROBABLY FIND THAT THIS TEST IS TOO DIFFICULT FOR FOUR-YEAR-OLDS AND TOO EASY FOR SEVEN-YEAR-OLDS. AT AGE SIX YEARS THE AVERAGE CHILD WILL TELL YOU WHAT IS MISSING IN AT LEAST THREE OF THEM. DO YOU FIND ANY CHILDREN WHO HAVE JUST REACHED THEIR FIFTH BIRTHDAY ABLE TO POINT OUT THE MISSING PART IN EACH PICTURE? IF SO, THEY ARE UNUSUAL SO FAR AS THIS TEST IS CONCERNED. IN THE TERMAN REVISION, 1916, THIS ITEM WAS PLACED AT THE SIX-YEAR LEVEL. (The selections from Lewis M. Terman and Maud A. Merrill, *Measuring Intelligence,* are used by permission of, and arrangement with, the publishers, Houghton Mifflin Company.)

people begin to have so many divergent experiences that there is no common denominator upon which to judge them. Mental age is said to represent a relationship between the individual who is tested and his cultural environment; hence, to test fairly, all persons must have had the same opportunities. By the time they have completed elementary school, however, they begin to specialize in their interests, skills, and informational backgrounds. Thus, it has been

argued, mental age becomes a meaningless concept after age fifteen or sixteen.

The intelligence quotient.—Mental age alone does not tell us anything about the degree of intelligence of an individual. He may have a mental age of five years and be bright, average, or dull. A child who is four years old

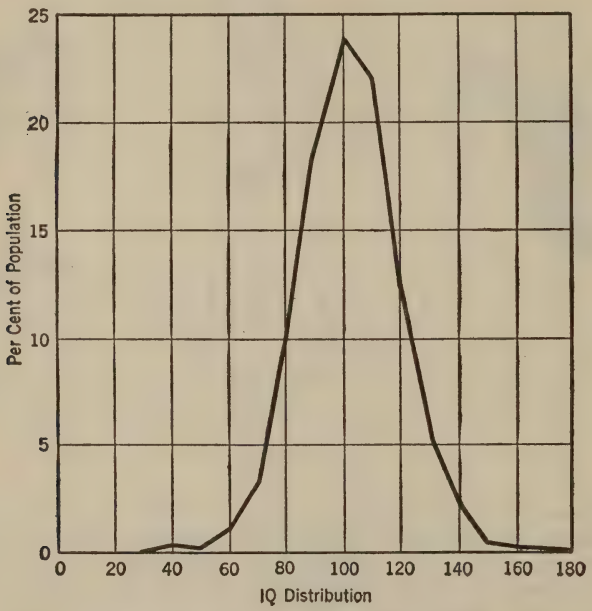

FIG. 55.—DISTRIBUTION OF IQ'S IN A SAMPLING OF THE POPULATION WHICH IS REPRESENTATIVE OF NATIVE-BORN WHITE CHILDREN IN THIS COUNTRY. THE HEIGHT OF THE CURVE ABOVE ANY BASE-LINE POINT INDICATES THE PER CENT OF INDIVIDUALS WHOSE IQ APPROXIMATES ANY GIVEN FIGURE. (The selections from Lewis M. Terman and Maud A. Merrill, Measuring Intelligence, are used by permission of, and arrangement with, the publishers, Houghton Mifflin Company.)

chronologically and whose mental age is five would, of course, be more intelligent than one who is at the same mental age level but whose chronological age is six. Therefore, to take into account the relationship between chronological age and mental age, the psychologist uses a ratio known as the intelligence quotient (usually referred to as the IQ). The formula for the IQ is MA/CA times 100. The distribution of IQ's in a sample of about twenty-nine

hundred individuals, ages two to eighteen combined, is indicated in Figure 55.

According to the Terman-Merrill Revision, IQ's between 84 and 116 indicate that the individuals are normal in intelligence as it is measured by this scale. From 117 to 132 indicate superior intelligence, whereas those between 68 and 83 are indicative of dullness. IQ's above 132 and those below 68 denote, respectively, genius or potential genius and feeble-mindedness.[18] These boundary lines are not hard and fast, however, and they are merely a rough classification. There are some technical objections to the continued use of the intelligence quotient, since IQ's are found to vary when different tests are employed. The IQ concept has become firmly established, nevertheless, and apparently there is no immediate prospect of supplanting it by a more scientific score.

The meaning of mental age and IQ.—It is important to regard both the mental age and the IQ as convenient representations of test scores. A great deal of popular misunderstanding has arisen about the meaning of both these scores. Occasionally, they are referred to as though they were subtle, infallible indices on the basis of which a program of education and vocational guidance may be based. Mental ages are nothing more than expressions of the average degree of attainment on a given test for individuals of different chronological ages. In some cases, the mental age level is greatly affected by the educational status of the individual. In other instances, the tests have been inadequately standardized on limited samplings of the population at various age levels. The IQ is nothing more than a ratio between this more or less arbitrary mental age score and the actual age of the individual. The value of the IQ lies in the fact that it expresses the relative amount of intelligence which an individual possesses and which is measured by the test.

It is evident, therefore, that the meaning of mental age depends upon the adequacy of the sampling upon which average performance for various chronological ages has been made. In general, the Binet-type tests are the best examples

[18] Feeble-mindedness is *not* determined solely on the basis of an IQ or a MA. See Chapter XII.

of well-standardized measures of linguistic intelligence. They are found to be satisfactory for predicting success in the curriculum of the school. One of the basic assumptions is that IQ's remain fairly constant during the growth of the individuals who are tested. It is axiomatic that the average IQ at each age is 100, and the tests have been standardized in such a way as to keep the IQ fairly constant from year to year for a given individual. Therefore, there is nothing strange or mysterious about the "concept of IQ constancy." As a matter of fact, most tests are carefully standardized so as to keep the IQ from fluctuating very much. Of course, there are certain fluctuations which are to be expected. Children may not coöperate in one testing, and at another time they may do their best. Health factors, the personalities of the examiners, and mood are a few variables which cause IQ's to differ when tests are repeatedly given to the same individuals.

Types of intelligence tests.—Binet-type tests are primarily measures of linguistic facility. Although they usually include a few items which are non-linguistic, a non-English-speaking child, one who is accustomed to hearing a foreign language spoken at home, or a deaf child does not have a fair chance in these tests. Therefore, measures of intelligence have been devised in which there is little or no need to use language. These measures are commonly referred to as performance tests. They are particularly useful in testing illiterates, foreigners, children who have speech defects or who are deaf, and those who have a meager educational background. They are also useful as a supplement to a Binet-type test, since there are some individuals who have a superficial mastery of language, and hence, in linguistic tests, give the impression of having superior intelligence.

A simple example of a performance test is the Good-enough Draw-a-Man Scale.[19] The psychologist, by verbal instructions or pantomime, gets the child to draw a man. The drawing is evaluated, not upon the basis of artistic merit, but upon the inclusion and the omission of such items as legs, nose, mouth, and fingers, and upon the propor-

[19] F. L. Goodenough, *Measurement of Intelligence by Drawings* (World Book, 1926).

tion among the parts. This intelligence scale covers the age range from three to thirteen inclusive. Another example of a performance test is the Kohs Block Design Scale, in which the subjects duplicate patterns by arranging colored cubes.[20] The most elaborate performance scale is the Pintner-Paterson, which consists of a number of form boards and other manipulative tests. For example, one of the form

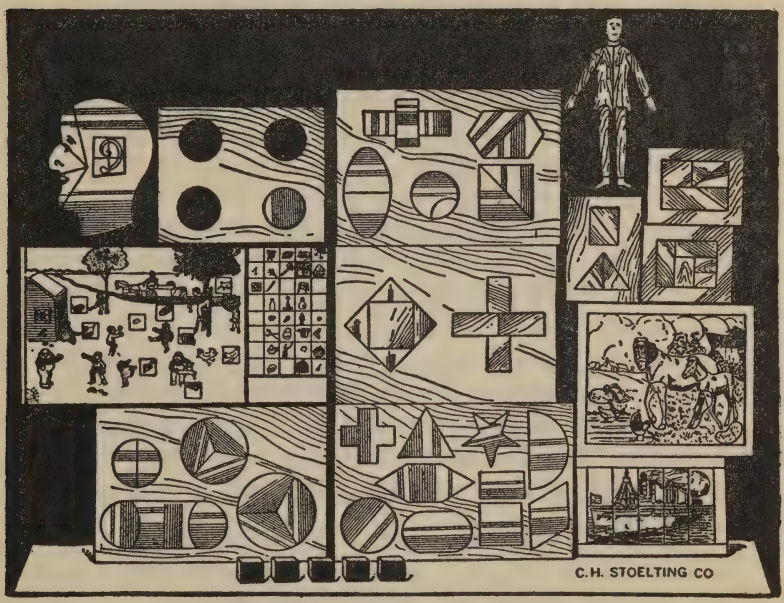

FIG. 56.—EXAMPLES OF FORM BOARDS AND OTHER MANIPULATIVE TESTS INCLUDED IN A TYPICAL PERFORMANCE SCALE. (The Pintner-Paterson "Long" Scale.) Courtesy of C. H. Stoelting Co.

boards contains recessions into which nine pieces fit to make a square and a cross; and in one of the manipulative tests eight pieces are to be put together to make the profile of a human face. In scoring tests of this type, the examiner records the time, the mistakes, and the number of moves—sometimes one and sometimes all of these measures being used to determine the final score. The scores are translated into mental age equivalents by reference to a table, and thus IQ's are obtained.

[20] For a description of this method, see S. C. Kohs, *Intelligence Measurement* (Macmillan, 1923).

The tests which have been described thus far are individual scales. Properly to administer one of these tests, the examiner spends a considerable length of time with each subject. In a psychological clinic, for instance, it is quite a task to examine five or six children a day. To secure a quick measure of individual differences in intelligence, therefore, psychologists and educators have developed group tests. Commonly included in group tests of intelligence are problems in arithmetic, general information, synonym-antonym exercises, common sense statements, and analogies. During World War I there was a need for a quick, convenient method for classifying the men who were inducted into the United States Army. Consequently, a group of psychologists devised the Army Alpha Intelligence Examination, which was given to a great many young men. This well-known test includes the following subtests: (1) Following Directions, (2) Arithmetical Reasoning, (3) Common Sense, (4) Synonym-Antonym, (5) Jumbled Sentences, (6) Number Completion, (7) Analogies, and (8) General Information. A number of test items were included in each division.

Although this test is now obsolete, some illustrations will indicate the general nature of group tests. In a directions test, for instance, the examiner would say:

> "Attention! Attention always means pencils up. Look at *twelve*. If six is more than four, then, when I say 'Go,' cross out the *five*, unless five is more than seven, in which case draw a line under number *six*. 'Go!' " (Not over ten seconds allowed.)
>
> 12. 1 2 3 4 5 6 7 8 9

The Arithmetic Test includes sixteen problems, graded in difficulty and as many as possible to be done in five minutes, such as:

1. How many guns are 40 guns and 6 guns?
16. If a train goes 200 yards in 10 seconds, how many feet does it go in a fifth of a second?

The following example will indicate the nature of the common sense or practical judgment test:

1. If plants are dying for lack of rain you should
   —— water them
   —— ask a florist's advice
   —— put a fertilizer around them

Synonym-antonym tests are usually modeled on this pattern:

If the two words of a pair mean the same or nearly the same, draw a line under *same*. If they mean the opposite or nearly the opposite, draw a line under *opposite*.

1.	cold—hot	same . . . . opposite
31.	decadence—decline	same . . . . opposite
32.	nullify—annul	same . . . . opposite

The jumbled-sentences test contains twenty-four mixed-up sentences, some of which are true and others false. They are to be straightened out mentally and marked as true or false, thus:

5.	months warmest are summer the	true . . . . false
12.	iron paper made of is filings	true . . . . false
24.	inflict men pain needlessly cruel sometimes	true . . . . false

In number-completion exercises the customary patterns are like the following examples from the Army Alpha:

Write the two numbers that should come next.

25	25	21	21	17	17	..	..
4	8	10	20	22	44	..	..
15	16	14	17	13	18	..	..

An analogies test may take this form:

See what the relation is between the first two words, and underline the word among the last four words that is related in the same way to the third word.

dog—bark::cat—chair mew fire house
white—black::good—time clothes mother bad
lead—bullet::gold—paper coin silver copper

A test of general information may take the following pattern:

Draw a line under one of these four words which makes the truest sentence.

1. Boston is in Connecticut Rhode Island Maine Massachusetts
16. Rodin is famous as a poet painter sculptor composer

Usually a group test imposes time limits, and the subject's test score is determined by the amount which is done within those limits. Some psychologists have raised the objection, therefore, that the slow, accurate person is unable to do his best when time limits are imposed. It has been proposed that scores on speed tests be referred to as *brightness indices,* and that IQ's be used in reference to achievement in tasks graded in order of difficulty, especially when the speed factor is not emphasized. In individual intelligence tests the speed factor is minimized; but it is a large determinant of scores in most group tests, such as the Army Alpha.[21]

Aptitudes, Their Nature and Importance

Choosing an occupation.—All too often people select their occupations in a superficial, haphazard way. As a result, some of them are very unhappy; some become resigned to a monotonous, uncongenial type of work for which they are unfit; and others finally succeed in adapting themselves to the requirements of their job. In a survey of about nine hundred college students who had already chosen their vocations, one investigator found that only 2 per cent had read through the literature dealing with their chosen occupation, 60 per cent had done a bit of superficial reading about it, and 38 per cent had read nothing at all before making their choice.[22] Obviously, some preliminary steps in an intelligent selection of an occupation would include the following: find out about the nature of the work, discover the opportunities for employment and advancement, learn what preparation is required, and make certain that

[21] For a brief discussion of this point, see F. N. Freeman, *Mental Tests* (Houghton Mifflin, 1939), 262-270.

[22] E. J. Sparling, *Do College Students Choose Vocations Wisely?* (Teachers College, Columbia University, Contributions to Education, 561, 1933).

one has the abilities to profit by instruction in the field. To assist young people in determining whether they have the ability to learn a given occupation, as well as to help employers and counselors in selecting candidates, psychologists have developed a new type of test.

Aptitudes.—As we have already noted, a linguistic test of intelligence is an excellent basis upon which to predict a child's chances for success in school. Thus it might more appropriately be called a test of scholastic aptitude. Thorndike has reported that a youngster who has normal educational opportunities but who has not reached the eighth grade by age fourteen and a half cannot be expected to succeed in any reputable college or professional school, no matter how much he tries.[23] The general experience of teachers has indicated that, with some exceptions, the likelihood of future successes in school may be predicted on the basis of marks already earned in school. That is, teachers are able to make a reasonably accurate judgment about each pupil's fitness to benefit by continued schooling. Scholastic aptitude, therefore, may be defined as the potential ability to learn more advanced studies, and the personal fitness of a given individual to adjust satisfactorily to the routine of school, college, or professional school. The essential significance of an aptitude is that it furnishes a more scientific basis for prediction.

For many years, of course, educators have given achievement tests in order to determine the fitness of applicants for continued instruction. The College Entrance Examination Board, for example, used to set up some arbitrary examinations on secondary education, and then judge whether or not an applicant were likely to succeed in a college or university. Civil Service boards used examinations to weed out unpromising candidates and to select those who might be satisfactory workers. Until the development of intelligence tests, however, these examinations were generally quite arbitrary, rule-of-thumb, and unscientific procedures. The successful application of intelligence tests (measures of scholastic aptitude) in educational work led many psychologists

[23] E. L. Thorndike and others, *Prediction of Vocational Success* (Commonwealth Fund, 1934).

to experiment with the development of tests of special aptitudes.

In all these tests the term *aptitude* is used in the same broad connotation. It refers to those characteristics which are shown by experience to be predictive of an individual's ability to benefit by education or training in a given field. Whether this ability is inborn, acquired through experience, or developed by the interaction of heredity and environment, is an academic question so far as aptitude measurement is concerned. An aptitude test takes samples of the individual's abilities as they are now, and on that basis makes a prediction about his potentialities for developing them further. In other words, an aptitude test is concerned with a practical end. The judgments based upon a given aptitude test are never given in dogmatic terms. On the contrary, scores in aptitude tests indicate merely the probabilities that a given individual will succeed, fail, or achieve mediocre results in some field or other. Many other factors must be taken into account in predicting vocational success. Among them are the following: opportunities for finding employment, personal characteristics, financial resources, ambition, and determination. For example, a pupil might possess great scholastic aptitude, and yet be uninterested in school, lacking in funds to go to college, or hostile to teachers. The likelihood is, however, that a pupil with great scholastic aptitude would enjoy school, win a scholarship, and appreciate the services of teachers.

Individuals differ in their aptitudes, not only for success in the various branches of the curriculum, but also for fitness in the different occupational fields. In no one individual are all aptitudes equally strong or weak. That means that no one is "all-around" in any field of performance. Critics of art, music, and literature have familiarized us with the "weak spots" in the work of some of the greatest geniuses the world has ever known. No one does everything equally well. Conversely, everyone above the feeble-minded level is likely to possess some particular aptitudes that might be developed, at least to a reasonably satisfactory degree whereby the individual could make a more satisfactory adjustment. Aptitude tests, carefully selected and rightly interpreted, are

sometimes helpful in self-appraisals to discover these "areas" of possible improvement.

Nursing aptitude.—To illustrate some aspects of aptitude measurement, we shall briefly review some of the work that has been done in the field of nursing education. Until the middle of the last century few women entered the nursing profession; in fact, it was hardly a profession at all. Now, however, it is predominately a field for women and it has been lifted to a professional status. No longer does the student nurse have to save the institution the expenses of charwomen for the first year of her course. Consequently, the possession of great physical stamina is not the outstanding requirement at the present time. Nevertheless, the applicant is expected to be physically fit, since the work of a nurse demands a good constitution. The first condition to consider indispensable to nursing success, therefore, is one's physical condition or general health.[24]

In the next place, the student nurse is expected to master a number of semi-technical branches of knowledge; hence she should have at least normal scholastic aptitude. Of course, the possession of exceptional intelligence is an asset in any field.

Nursing aptitude tests have been developed by Moss and Hunt, and by Potts. The Moss and Hunt [25] battery requires about an hour to give. It includes the following: common sense or practical judgment in nursing situations, general and scientific vocabulary, ability to benefit by a ten-minute study of a diagram and a description of the eye, and a directions test. In general, it resembles a typical scholastic aptitude test, but with the content adapted to the classroom work usually given in schools of nursing.

An interesting approach to the determination of nursing aptitude has been made by Porteus, who has published a

[24] The following quotation is taken from Guidance Leaflet No. 15, United States Department of the Interior: "Good general health is, of course, the first qualification of a student nurse. The nature of the work requires that the nurse be on her feet the greater part of the time. She must have good eyesight, good hearing, good physique, and a pleasant voice. The duties demand that she be faithful, trustworthy, reliable, and willing to serve. She should be at least 18 years of age but not over 35."

[25] See, for example, the *Aptitude Test for Nursing, Form 2, 1st ed.*, by Thelma Hunt (Center for Psychological Service, Washington, D. C., 1940).

rating scale for prospective nurses.[26] Responses are scored by comparing them with the responses of student nurses who have already been rated by their superiors. Thus, a prospective nurse who has good aptitude for the profession rates herself as being a person who is methodical; somewhat self-assertive in standing up for her rights and in not being blindly obedient, though observant of every hospital regulation; never inclined to make excuses, yet always eager to find out the cause for her mistakes; very sociable, and usually a leader in company or at parties; and extremely thorough in all her work. The inferior prospective nurse, on the other hand, is submissive, easy-going, vacillating, self-conscious, upset by criticisms, sentimental, and careless.

According to some investigators,[27], [28] the correlation between scores on the familiar group tests of intelligence and the degrees of success in practical nursing work is rather low. The reason is probably that these tests are intended to measure principally the aptitude for learning abstract or theoretical material. As a matter of fact, the correlation between these intelligence test scores and teachers' marks in courses dealing with theoretical subjects is high. In general, the student nurse of today is selected from those in the superior level of academic intelligence. Miles, for example, found that a representative group of student nurses had an average IQ of 118.[29]

Miss Edith Margaret Potts, R.N., Director of the Testing Service Division for Schools of Nursing of The Psychological Corporation summarizes the findings to date, as follows: [30]

(*a*) There is a definite and steady increase in eliminations because of classroom failure as scores on a scholastic aptitude test decrease.

[26] The Scale is published in S. D. Porteus, *The Practice of Clinical Psychology* (American Book, 1941), pp. 529-535.

[27] See G. Y. Clark and E. B. Smith, "Some Uses of Psychological Tests in the School of Nursing," *American Journal of Nursing*, XXIX (1929).

[28] See M. S. Faber, "Mental Tests and Measurements," *American Journal of Nursing*, XXVIII (1928).

[29] C. C. Miles, "The Personality Development of Student Nurses," *American Journal of Nursing*, XXXIV (1934), 2.

[30] Courtesy of The Psychological Corporation, 522 Fifth Avenue, New York, N. Y.

(*b*) There is a correlation of about .5 between scholastic aptitude scores and final grades in classwork. (This is much like the correlation usually found between such tests and college grades.)

(*c*) There is a correlation between .4 and .5 between scholastic aptitude test scores and State Board Examinations. (This is probably somewhat initiated by the fact that the examinations are usually essay form and somewhat too short to sample the entire subject.)

(*d*) When scores made on tests of reading skills and scientific vocabularies are used with scores on a scholastic aptitude test the correlations with classroom grades and State Board Examinations are increased.

(*e*) There is a tendency for the percentage of elimination for "personality reasons" (failure to adjust, immaturity, etc.) to increase as scholastic aptitude scores fall—though this is undoubtedly affected by other factors also.

(*f*) While an occasional student whose scholastic aptitude score falls below the average for her group may make slightly better than average grades there is very little tendency for those with above average scholastic aptitude (compared to the class) to make below average grades.

(*g*) All tests used and all items added from time to time are known to differentiate between students who complete the course and those who do not do so. This study is made before the items or the test are made a part of the battery upon which reports are sent. (Of course this takes at least two years.)

(*h*) Applicants' own rating of themselves is not extremely dependable because

1. They may deliberately falsify.
2. They may have poor power to be objective concerning their own actions. However, a personality measure is used and is somewhat helpful.

Here is a list of personality traits which are said to be essential for success in nursing:

Genuine liking for people.
Ability to coöperate with colleagues and superiors.
Good intelligence, scientific interests, and at least a high school education.
Emotional stability, self-control, good sense of humor.
Good health, physical and mental.

A cheerful, but not superficial, philosophy of life.
High moral character, good taste, refinement.
Sense of responsibility.
Attentive to details.
Open-mindedness, tolerance.
Ability to make scientific observations.
Resourcefulness.
Neatness and personal attractiveness.
Ability to instruct others.[31]

Numerous attempts have been made to discover nursing aptitude by using personality inventories which include some or all of these traits. In general, however, the results have not been wholly satisfactory. The point of this discussion is to make clear some of the difficulties in aptitude measurement. One of the hardest tasks confronting psychologists is that of devising, standardizing, and validating suitable tests of aptitude which may be used by young people who are genuinely interested in making a wise choice of an occupation. At the present time, this whole field is still in its infancy. Few contributions in psychology, however, are more important and helpful than these attempts to assist young people in avoiding job dissatisfaction.

Tests of Personality and Character

The personality inventory.—Questions that are usually asked by a psychiatrist, a counselor, or a guidance teacher have been carefully edited and arranged in printed form as a sort of self-interview. The questions, which are answered *Yes* or *No,* are scored in such a way as to determine the individual's status as compared to other people. For example, the following questions appear in many of the personality inventories:

1. Do I like to be alone most of the time?..... Yes No
2. Am I often bothered with nightmares?..... Yes No
3. Was I treated fairly by my teachers?..... Yes No
4. Are my feelings easily hurt?..... Yes No
5. Do I often have stage fright?..... Yes No

[31] From C. C. Miles, "The Personal Development of Student Nurses," *American Journal of Nursing,* XXXIV (1934), 2.

Obviously, the "right" answers would be *Yes* for No. 3 and *No* for the others. A personality inventory usually contains from seventy-five to a hundred and fifty questions or items. Many ingenious methods of presenting the questions have been tried out, and there are several types of scoring procedures in common use.

In general, the procedure used in developing a personality inventory is as follows: First, one draws up a list of questions or items which are commonly included in an intimate interview dealing with personal maladjustments. Next, these are carefully edited and put into some form whereby they may be scored objectively. Now the test is tried out, preferably on one group known to be maladjusted, and on another known to be well adjusted. Each item that does not differentiate these two groups is discarded. Thus, more people known to be shy and timid answer by *Yes* the question, Do I worry a long time over humilitating experiences? than do people who are socially aggressive or extraverted. Finally, the test results are compared with other criteria for judging personality. The line of least resistance is to compare the scores on a new personality test with the scores obtained on other tests already on the market. In some cases, attempts have been made to compare the test scores with observations of the individual's behavior in real-life situations.

The personality inventory fills a genuine need in case history studies and clinical investigations. If one is not inclined to be easily depressed or to be morbidly introspective, it is worth while to undertake a self-evaluation by taking a number of these inventories. It is well to bear in mind the fact that these personality inventories are by no means infallible.[32] In fact, some of them are practically worthless and without validity. A test is said to be valid when it actually measures the trait which it purports to measure. Intelligence tests of the linguistic type are, for example, valid in so far as they predict school marks. On the other hand, personality inventories, even though they are modeled upon

[32] P. L. Harriman, "A Follow-up Study of the Woodworth-House Mental Hygiene Inventory," *American Journal of Orthopsychiatry,* VIII (1939), 255-259.

the pattern of intelligence tests, may be entirely lacking in validity. The questions or items may be variously interpreted by different people who take the test. The pattern of responses to individual questions may be much more significant than the total score on the test. People may answer as they would like to be, not as they really are. In short, they are useful instruments when they are thoughtfully taken and competently interpreted. The wholesale use of personality inventories taken and scored in a mechanical fashion is to be deplored.

Tests of character traits.—Character may be defined as an ethical concept; it is personality evaluated according to some arbitrary, undebatable code. Many novel and ingenious tests have been devised for the experimental study of character traits in school children. For instance, one procedure is to have the pupils take a test, and then score it themselves. If twenty very easy questions were mixed in with twenty which no pupil could possibly answer correctly, it is evident that pupils who report a mark of more than 50 per cent are cheating. By giving pupils opportunities to be untruthful, to cheat, or to steal, one group of investigators gathered a great deal of interesting data.[33] They found that pupils were extremely inconsistent in their responses. Those who would be truthful in one type of test would be deceitful in another. Although some pupils were much more consistent than others, practically none of them were dishonest in all the thirty-two tests used in the inquiry. In the main, pupils from good homes and neighborhoods and with high intelligence and satisfactory personality adjustments were more frequently honest than dishonest. Enough work was done to show that character traits are probably made up of many specific habits. In other words, there may be a general trait of honesty or dishonesty, but this study found little support for this notion.

Other indices of personality trends.—A device which is now attracting a great deal of attention is the Rorschach Ink Blot Test. Ten blots are used, some in colors and others in black and grays. The subject is asked to tell what he sees in each blot, and then his responses are classified according

[33] H. Hartshorne, and M. A. May, *Studies in Deceit* (Macmillan, 1928).

to an elaborate and involved scoring procedure. Many claims have been made for the validity of this test, but it has not yet been established as an infallible measure. On the contrary, some of its devotees make such broad and sweeping claims for the Rorschach method as to cause some psychologists to consider the "Rorschachers" a cult. A better attitude would be one of suspended judgment at the present time.

Observations of people, especially when they are confronted by an emergency, may give excellent opportunities to detect some important trends in personality. When everything goes smoothly, people seldom display their real natures. The nurse has an excellent opportunity to observe the behavior of many individuals who are confronted by critical situations in their lives. Faced by the prospect of a long convalescence, a serious operation, or heavy expenses, patients are likely to reveal themselves as they really are, not as their neighbors back home are accustomed to see them. When we are hard pressed by great difficulties, we lose the inhibitions which we customarily enforce in routine situations. Thus we may reveal some of the most significant traits in our personalities. Few people have a better opportunity to make clinical studies of our personalities under such circumstances than the nurse does.

In the following chapter we shall consider some important types of atypical and socially maladjusted persons, such as we encounter in daily life or read about in the newspapers.

QUESTIONS AND EXERCISES

1. What motives lead people to make out a strong argument for the importance of heredity? of environment? Are those who take such extreme views prejudiced? How? Why?
2. "All development depends upon the combined action of heredity and environment" (Woodworth). Explain fully.
3. Explain and illustrate the following factors in individual differences: sex, race, age, early neighborhood, vocation, education. Is it true that we sometimes confuse biological heredity with social heredity? Differentiate between them.
4. Describe the principal characteristics of a stupid person; of a brilliant person. In what respects do they differ?
5. How do people reveal their intelligence? If you were draw-

ing up a check list to use in observing individual differences in intelligence, what would you include?

6. Why do scientific psychologists prefer to use the pedantic term *test intelligence* rather than *intelligence* in referring to an individual's IQ? Which would be affected by coaching, intelligence or test intelligence? Explain.
7. Make a careful study of the Terman-Merrill Scales, L and M. Become familiar with the placement of at least twenty items. Form an estimate to show how successes might be largely determined by linguistic facility. Would a glib person tend to make a high score (on what items, for example)? What test items, in your judgment, give the best index of "native intelligence"? Why?
8. Define the following terms: performance test, mental age, IQ, and intelligence.
9. Your instructor will obtain copies of a good intelligence test and a personality inventory. Ascertain your status in the group. Discuss the validity of the results. (The Bernreuter Personality Inventory and the Otis Self Administering Intelligence Test, Advanced, are good measures. They are obtainable from the Psychological Corporation, 522 Fifth Avenue, New York City.)
10. What environmental factors might affect the scores on these tests? Discuss fully. Which type of test might be the more affected by environmental influences, an intelligence test or a personality inventory? Why?
11. Summarize all the instructions which you would give to a young person who has not yet chosen an occupation.
12. Define aptitude. How do you differentiate between aptitude and achievement? In what sense may we regard a test of linguistic intelligence as a measure of aptitude?
13. Distinguish among the following terms: aptitude, achievement, interest, innate capacity, special ability. Give original examples after you have carefully looked up the definitions. (Use the *Dictionary of Psychology,* H. C. Warren, editor. Houghton Mifflin, 1934.)
14. Which is preferable, to give a great many tests and inventories which are scored and tabulated in clerical fashion, or to give a few tests which are thoroughly interpreted? Why?
15. Obtain catalogues from some of the leading publishers of tests and inventories. Read the descriptions carefully. Then consult O. K. Buros, *Mental Measurement Yearbook,* 1938 and 1940 (Rutgers University Press), for various opinions

about these measures. What is a tenable scientific attitude to take regarding psychological measurement?

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CHAPTER XI

THE ATYPICAL AND THE SOCIALLY MALADJUSTED

How Personalities Are Classified

The meaning of normal.—Parents are gratified when a teacher or a physician informs them that their children are normal. In popular usage, *normal* is often used to refer to a desirable or an ideal condition; consequently, *normality* is assumed to be a state of affairs for which one should strive. *Normal,* however, has another connotation. In a scientific sense, the normal individual often denotes the typical person, but not the atypical. Thus, the psychologist may use the word *normal* in a statistical sense, not as an authoritative

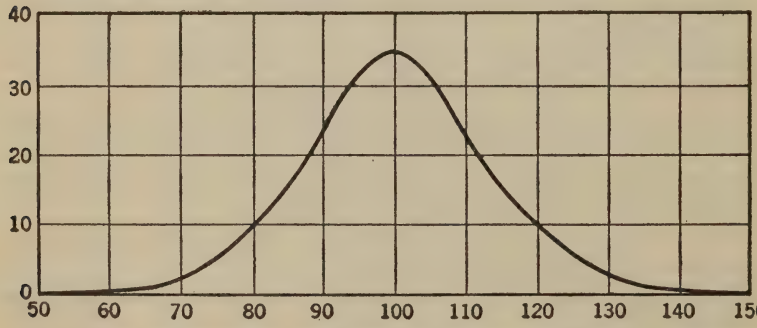

Fig. 57.—On the base line are the scores, grouped in intervals of 10, and on the perpendicular axis are the percentages of the population included within a given interval. Note that the curve approaches the base line at either extreme and rises to its maximum height above score 100.

standard, but roughly as that area of a distribution within which 80 to 85 per cent of the cases fall for any given trait. A theoretical distribution is shown in Figure 57.

In the distribution shown in Figure 57 the average score is 100, and about two-thirds of the scores are included within

the limits 90-110. An actual distribution in a simple test of addition will make the point clearer. Two hundred and eighteen college students were given three minutes in which

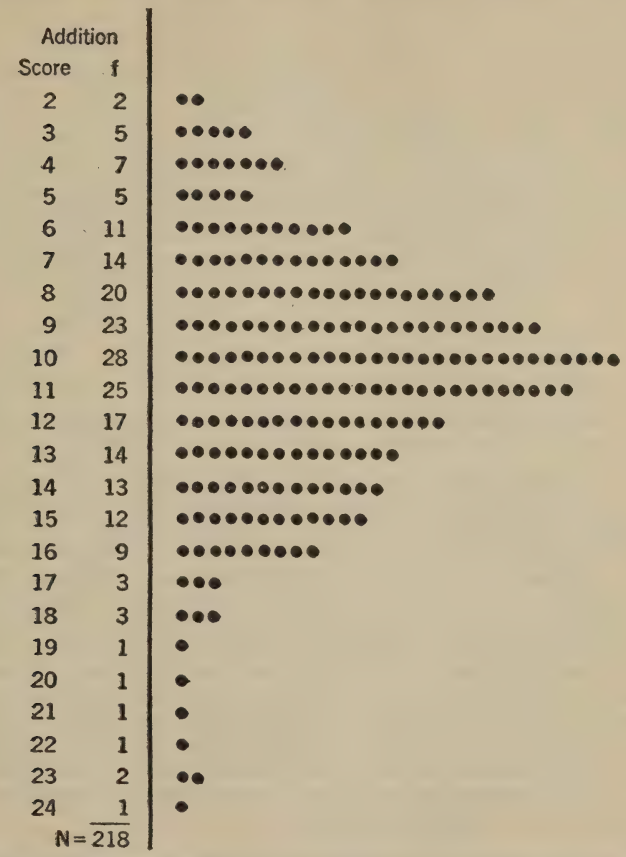

FIG. 58.—THE DISTRIBUTION OF SCORES IN A SIMPLE TEST OF SPEED IN ADDITION. The task was to add rapidly columns of two-place numbers. Twenty-four columns made up the test. Note that one individual did all the columns within the three-minute time interval and that two persons did only two columns. The subjects were two hundred eighteen college students. From L. L. Thurstone, *Primary Mental Abilities* (University of Chicago Press, 1938).

to add columns of two-place numbers. Note that only a very few of them did more than nineteen columns and that two students were able to get only two columns done. Observe that the scores pile up between 6 and 16 and that twenty-

eight students did ten columns in the test. This is a typical finding in most psychological experiments. At either extreme the number of cases is small, and at the center the cases pile up. Obviously, therefore, there are *degrees* of traits, qualities, normalcy, abnormality, and the like.

Who is normal?—The normal person, therefore, is the individual who is representative of the group. For practical purposes, on any given measurement his score lies within the middle two-thirds of the distribution. In other words, he is *typical* of his group; hence those who deviate markedly from him are said to be *atypical.* Since all traits seem to be distributed continuously—some few persons having the trait in

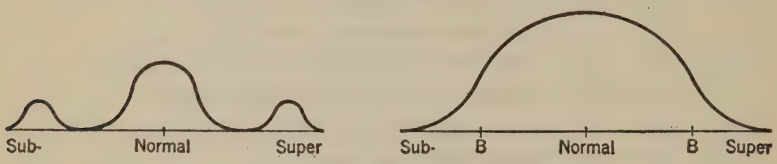

FIG. 59.—THE DISTRIBUTION AT THE LEFT REPRESENTS THE UNSCIENTIFIC WAY OF DEFINING NORMALITY. IT ASSUMED THAT IF A PERSON IS NOT NORMAL, HE IS EITHER SUBNORMAL OR SUPERNORMAL. THE USE OF DIAGNOSTIC LABELS TENDS TO IMPLY THIS FALLACY. THE DISTRIBUTION ON THE RIGHT SHOWS HOW PERSONALITY TRAITS ARE ACTUALLY DISTRIBUTED. THERE IS A CONTINUOUS DISTRIBUTION OF A GIVEN TRAIT, THOUGH IN VARYING DEGREES, FROM ONE EXTREME TO THE OTHER. NOTE THAT AT EITHER EXTREME THERE WOULD BE VERY FEW CASES, AND THAT MIDWAY BETWEEN THE GREATEST NUMBER OF CASES WOULD OCCUR. ALTHOUGH DIAGNOSTIC LABELS ARE CONVENIENT AND USEFUL, THEY TEND TO SUGGEST THE DISTRIBUTION AT THE LEFT, WHEREAS THEY ARE PROPERLY INTERPRETED AS INDICATING, ROUGHLY, CERTAIN POINTS IN THE DISTRIBUTION, WHICH ALWAYS RESEMBLES THE CURVE ON THE RIGHT. THE SPACE BETWEEN *B* AND *B* INCLUDES THE MIDDLE TWO-THIRDS, AND HENCE IS SAID TO REPRESENT THE AVERAGE OR NORMAL.

a minimum degree and others having it in a maximum degree—there are all sorts of gradations. For example, a person is not either sick or well; but there are many subtle gradations between death-bed affliction and perfect health. The average person, therefore, would lie somewhere between the extremes of sickness and health. In other words, when we classify people, we must not assume that everyone is either normal or abnormal, typical or atypical, healthy or ill. Some approach the ideal condition; others are far from it.

Nevertheless, there has always been a great interest in trying to "pigeon-hole" personalities.[1] One of the oldest attempts is that attributed to Galen, the great physician of antiquity. According to his theory, there are four "humours" in the body: yellow bile, black bile, phlegm, and blood. Correlated with each "humour" there is a "personality type" which becomes evident when the "humour" is excessive in amount. Thus, an oversupply of yellow bile produces the *choleric* individual, who is highly emotional and quick to anger; black bile in excess causes the *melancholic* type of personality; *phlegm,* the slow, lethargic, or phlegmatic personality; and blood, the hopeful, optimistic or *sanguine type.* In a later age, when cerebrospinal fluid was discovered, a fifth temperament or personality type was added: the nervous type, caused, supposedly, by an oversupply of this "humour." Many other attempts have been made to set up type-classifications, and all of them represent the same general fallacy. They are all based upon the assumption that personality differences are absolute. As a matter of fact, the differences are continuous; that is, people differ in degrees, not in kind. Everyone, for instance, has some height, but people differ in degrees of tallness. Some few persons are less than four feet tall, whereas a few are more than six feet, ten inches; but the average young man is about five feet, seven inches tall. Consequently, attempts to "type" personalities are foredoomed to failure.

Nevertheless, popular speech, as well as the terminology of psychiatry and psychology, abounds in diagnostic labels and allusions to "types." If one understands that these terms are used merely for convenience and that they do not imply the existence of absolute differences, they have a great deal of value in descriptions of various individuals. Thus, when we say that some one is an introvert, we apply a convenient diagnostic label which helps us in understanding the person's habitual adjustments, particularly to other people. An introvert, by definition, is a person who has a minimum of interest in the external world and who is given to a great

[1] For a good argument supporting the "type" doctrine, however, see G. Murphy and F. Jensen, *Approaches to Personality* (Coward-McCann, 1932), chap. i. See also G. W. Allport, *Personality* (Holt, 1937).

deal of day-dreaming. On the other hand, it is fallacious to assume that introverts make up a separate class of individuals. As a matter of fact, there are various degrees of introversion, some people being more introverted than others. From the scientific point of view, we should consider this trait to be distributed in continuous fashion from one extreme to the other, and most people would lie midway between the extremes. That is, the great majority of people are neither introverted nor extraverted. The use of diagnostic labels is likely to obscure this fact. If, however, these descriptive terms are properly understood, they have a real value in descriptions of personalities.

Some "Types" of Deviates [2]

Exceptional children.—A legal definition of exceptional children is as follows: those over four and under sixteen

[2] By way of introduction to a brief discussion of some deviates, consider the following jingle:

Johnny Jones has lost a leg,
Fanny's deaf and dumb,
Marie has epileptic fits,
Tom's eyes are on the bum.

Sadie stutters when she talks,
Mabel has T. B.
Morris is a splendid case
Of imbecility.

Billy is a truant,
Harold is a thief,
Teddy's mother gave him dope,
And hence he came to grief.

Jimmy is a millionaire,
Jerry is a fool;
So every one of these darned kids
Goes to a special school.

They've specially nice teachers,
And special clothes to wear,
A special yard to play in,
And almost a special kind of air.

They have special lunches while at school,
But I—the idea makes me wild!—
I haven't any specialities,
I'm just a normal child.

Anon.

years of age, who, because of mental or physical handicap, are incapable of receiving proper benefit from ordinary instruction, and who, for their own welfare as well as for community welfare, need special educational provision. In a thousand school children, the following "types" might be found: [3]

Blind and semi-blind	3
Deaf and partially deaf	2
Speech defectives	3
Crippled	2
Psychopathic and delinquent	6
Mentally retarded and feeble-minded	12
Physically impaired	12

This is, of course, merely a rough estimate based upon a random sampling, but it gives a good idea of the prevalence of defects of one type or another among school children.

Defects in hearing.[4]—School records indicate that about 15 per cent of all pupils have serious impairments in hearing. This defect militates against the likelihood for success in the ordinary classroom, and many times a pupil who is partially deaf is considered to be stupid. For instance, a teacher might consider him inattentive when he fails to respond to a question; and when he misunderstands the question, his inappropriate answers might provoke the merriment of his classmates. Many situations like these tend to give the hard-of-hearing child a feeling that he is "different." Other children may say things in his presence in order to "get a laugh." Unable to hear his own voice clearly, he is unlikely to learn to speak correctly. Oftentimes his disability bars him from the play activities of normal children. Consequently, the hard-of-hearing child is likely to develop some profound disturbances in personality. In many occupations the totally and the partially deaf are unable to find employment; hence they encounter many economic difficulties.

The first step in dealing with a deaf child is, of course, to

[3] A. Gesell, *The Pre-School Child* (Houghton Mifflin, 1923), chap. vi. See also the *White House Conference, Addresses and Abstracts of Committee Reports* (Appleton-Century, 1931), 292-293.

[4] See chap. iii.

take him to the best available specialist. The school nurse should give the teacher all necessary information about the case, and make suggestions for adjusting the classroom procedures to fit the needs of the pupil. In the large cities there are special classes for exceptional children, including the hard-of-hearing and other types of deviates. In smaller centers of population, however, the child has to be given special attention in the regular classroom. If the defect is serious, then the school nurse may have to induce the parents to send their child to a special school. In dealing with teachers and parents, the nurse will find many occasions which try her patience and challenge her tactfulness. If, however, she is able to convince teachers and parents that the welfare of the child is uppermost and that she is not meddling or exercising autocratic powers, she will usually secure whole-hearted coöperation.

Defects in vision.[5]—It is conservative to say that one-fourth of all school children have serious ocular disabilities, the most common ones being myopia (nearsightedness), hyperopia (farsightedness), astigmatism (defective refraction), and strabismus (cross-eyes). In the customary routine test given in many public schools, farsightedness is often undetected. The pupil is able temporarily to hold the eyes in focus while reading the wall chart. Myopia is, of course, easily detected because the nearsighted pupil holds the book close to his eyes. The initial treatment of a pupil who has visual disabilities is to obtain the services of an oculist (not an optometrist). When the parents are unable or unwilling to defray the charges, however, some difficulties often arise. In some communities a local service club makes provision to supply the funds; in a few favored places there is an appropriation out of tax revenues. Unless the nurse has lived in backward areas, she may have little appreciation of the problems connected with getting medical attention for many pupils who desperately need it.

Some pupils are so seriously handicapped in vision that they ought to be placed in sight-saving classes. In the large cities there are such classes, but in smaller communities these pupils have to be adjusted within the routine pattern of the

[5] *Ibid.*

school. The school or the community nurse, therefore, may have to train the teachers to make special provision for these children, and to go to the school board to ask that special books be purchased for them. At one time, health authorities were inclined to favor special schools, usually state supported, where children handicapped by deafness or blind-

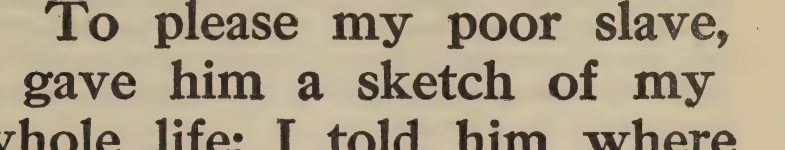

FIG. 60.—ILLUSTRATING THE SIZE OF TYPE AND THE LINE SPACING RECOMMENDED FOR SIGHT-SAVING CLASSES.

ness were sent. Now, however, the tendency is to keep the children at home if possible and to adjust conditions to fit their needs. In general, authorities recommend that the handicapped child be treated just as normally as possible, and most of them agree that a home environment is preferable to an institution. The nurse, particularly if she is in public health work, must, therefore, be able to instruct parents and teachers in the best ways to deal with these deviates.

Speech disorders.—For example, a great deal of money is wasted in sending children to quack schools for the treatment of speech disorders. There are many theories to explain stuttering, none of which has universal acceptance. One explanation, which formerly had many advocates, is that the stutterer ought to be trained to use the non-preferred hand. That is, if the youngster who stutters is found to use the right hand in writing or eating, then he should be trained to use the left. Another view is that stuttering, or any other speech defect, is "the fixation of the libido at the oral-erotic stage of development." As a matter of fact, no theory is adequate to account for all the varieties of speech disabilities. Nor is it at all certain that all speech disabilities are curable. If money and professional services could correct such a condition, the King of England would not stutter.

Investigations have demonstrated the fact that over 80 per cent of stutterers commenced to have their difficulties in

speech before they were six years of age. Among the causes which seem to be at the basis are the following: a severe fright; serious and debilitating illnesses; excessive nagging or scolding, especially whenever the child begins to speak; speech conflict, that is, rapid talking and slower thinking; imitation of another child; and improper habits of breathing. In some cases, of course, there is an organic basis which requires surgical attention, although these cases are said to be rare. Most stutterers "outgrow" their difficulty, whether as a result of maturation or of special training no one can dogmatically say at present.

The nurse should realize that speech disabilities may have a pronounced effect in producing a warped personality. In general, people are unsympathetic with deviates, and they are "amused" by the stutterer's distress. One college student wrote the following account of his difficulties:

I commenced to stutter when I was quite small, probably about four years of age. Father was impatient, and he used to say, "Stop! Begin again and take it slowly." Mother was worried about me, and she took me around to different "authorities," none of whom helped me at all. In school the other pupils liked to have me called on, because I made such a "mess" of my recitations. Several teachers never called on me at all, probably thinking to save me from embarrassment. I used to avoid people, especially strangers, because I was afraid of being laughed at.

I took a correspondence course once, and I was told to speak in a sing-song voice. That helped for a while, but I found that people laughed at the way I spoke. At another time I took a night class, in which I was taught to hold my tongue in a groove while I talked. That was a waste of time; hence I gave it up. I have tried to learn to use my left hand in throwing a ball, eating, and writing. That, too, was no help. My greatest satisfaction now is found in athletics. By excelling others I am able to build up some self-confidence. Whenever I am suddenly called upon in class or addressed by a stranger, I "go to pieces" still. When I am with a few close friends, however, I find that I seldom stutter now.

The nurse must take into account the fact that the speech defective is likely to be strongly introverted, morbidly sensi-

tive, and extremely anxious. By judicious advice, therefore, she may be able to "inflate the Ego" and to help the individual develop confidence. She ought to join the protest against the presentation of the "ludicrous" behavior of speech defectives in the movies and on the stage.

The crippled child.—There is, of course, no direct causal relationship between physique and personality. Contrary to the views of some people, those who are tall and thin are not invariably seclusive, thoughtful, and unemotional; nor are short, stout persons necessarily joyful, subject to moodiness, and friendly. Nevertheless, physique has definite effects upon the way personality develops. If an individual has an abnormal physique, he may have a difficult struggle to win a place in child society. He may be excluded from games, and in later life he may find trouble in obtaining employment. Particularly is it true that crippled children encounter many difficulties which normal youngsters do not have to face. In the first place, their parents may be oversolicitous for them. Hence they are shielded and protected during early childhood. In the next place, they may be excluded from participation in the rough and ready group activities of young children. At school, they may receive special consideration from their teachers. Finally, if their infirmity is pronounced, they may be stared at when they go among strangers. All these influences tend to make the crippled youngsters somewhat morbid and introspective. From the standpoint of mental hygiene, the best recommendation to give to the parents and the teachers of crippled children is this: Treat them as nearly as possible as though they had no infirmity. Be solicitous, of course, but do not let the youngsters know that you are being especially concerned for their welfare.[6]

Delinquents and psychopaths.—Careful investigations have established the fact that juvenile delinquents commence their antisocial behavior at a remarkably early age. According to one authority, a youngster living in a socially disorganized neighborhood in Chicago has twenty times greater a chance to become a delinquent than does one who

[6] See *White House Conference, Special Education: The Handicapped and the Gifted* (Appleton-Century, 1931).

lives in a good residental area.[7] The psychiatrists have emphasized the prevalence of unwholesome trends in the inner psychic lives of delinquents. For instance, two authorities state that 91 per cent of all the young delinquents they have investigated gave evidence of being discontented, unhappy, or emotionally unstable; of feeling rejected or insecure; and of having strong mental conflicts.[8] Many investigators have attempted to find the relationship between delinquency and defective intelligence, but the results of their studies are exceedingly diverse.[9] The estimates of many authorities vary between 7 and 93 per cent of young delinquents who are feeble-minded.

It is safe to conclude that all attempts to find one single cause for juvenile delinquency have failed. Undoubtedly there is an interaction of many factors. In dealing with these youngsters, therefore, the first requirement is to find out *why* they are misbehaving. Many times a young delinquent will respond satisfactorily when the causes for his or her misconduct have been removed and when appropriate guidance has been given. It is essential that the nurse or the teacher avoid taking a moralistic attitude in dealing with these cases. The most effective procedure is to combine psychiatric, medical (if indicated), social, and educational therapy. If the child is under age twelve or thirteen, the results of intelligent treatment should be favorable. If, however, the youngster is adolescent, the prognosis is rather poor. That fact should not, of course, deter one from attempting to effect a readjustment. It can be stated, even somewhat dogmatically, that one of the worst ways to treat a young delinquent is to send him or her to a reform school.[10] On the other hand, there seems to be no set of rules and principles which can be applied universally to correct delinquent trends. Each case must be studied intensively in order to

[7] C. R. Shaw, *Delinquency Areas* (University of Chicago Press, 1929).

[8] Wm. Healy and A. F. Bronner, *New Light on Delinquency and Its Treatment* (Yale University Press, 1936).

[9] R. Pintner, *Intelligence Testing* (Holt, 1923), 285.

[10] See Wm. Healy and A. F. Bronner, *Delinquents and Criminals, Their Making and Unmaking* (Macmillan, 1926), 73. See also A. C. Bowler and R. S. Bloodgood, *Institutional Treatment of Delinquent Boys* (United States Government Printing Office, 1936).

find the basic causes for the misbehavior, and then one must develop an intelligent, sensible, and practical therapy to fit the needs of the individual case.

A loosely defined, though convenient, label to apply to persons who cannot be easily "typed" but who, nevertheless, have marked deviations of a certain form is *psychopath.* Subsumed by this broad term are such divergent conditions as untrustworthiness, extreme selfishness, wanton destructiveness and cruelty, sex perversions, persistent lying, and other forms of antisocial behavior. The term is often used to designate those children and adolescents who are not psychotic or feeble-minded, but who have formed adjustments to their social environment which bring them into constant trouble with authority and which disturb the peaceful relationships of the community. Obviously, therefore, a term used with such a broad connotation is rather objectionable from the scientific standpoint; it is a sort of "catch-all" for individuals who are imperfectly understood. If, however, the term *psychopath* is used to refer to persons who have developed antisocial habits, owing to some pathology of the nervous system, it may have some value. There is a danger lest the use of pseudo-scientific terminology obscure the need for understanding the individual. Merely to "type" a person as a psychopath, therefore, is to accomplish nothing worth while. A young person who displays some or all of the symptoms of being a social misfit can, if properly understood, be helped by the coöperative endeavors of the nurse, the physician, the psychiatrist, the psychologist, and the teacher. The importance of determining the individual's faulty adjustments while he or she is still young cannot be overemphasized. Then there is a much more favorable prognosis if an appropriate program of reëducation and medical care is mapped out.

Talented and gifted children.—Brilliant youngsters usually are considered to be those who make high marks in school and who have IQ's of 140 or over. Of course, a pupil may have a very high IQ and make a failure of school; hence the emphasis is on the IQ status. In many cases brilliant children have become uninterested in the routine work of the school, and hence have been underestimated by their

teachers. In fact, the curriculum of the ordinary, non-progressive school is poorly adapted to the needs and the interests of exceptionally bright pupils. Well-qualified teachers, however, seldom err in detecting high intelligence in their pupils, but they infrequently make suitable provisions for these children. Occasionally they overrate the glib, "verbalistic" child, and fail to notice the signs of acceleration in a quiet pupil. Frequently they ignore the age factor in estimating intelligence differences by subjective methods. Thus, an over-age pupil competing with younger children may receive an undeserved reputation for superior intelligence, whereas he or she may be normal. Deference to authority, good personal appearance, linguistic facility, and coöperation are often used as criteria upon which to make subjective evaluations of high intelligence. The advantage of an intelligence test, of course, is that it makes an impartial, objective determination of the relative status of each pupil. In general, pupils are called *gifted* if they are in the upper 1 or 2 per cent of the population.

Contrary to popular belief, most of these brilliant children tend to be bigger, stronger, more healthy, and better coördinated than their classmates who are at the same chronological age. Brilliant adolescents have even been judged better looking than average youngsters. In elementary and high school they tend to excel in all branches of the curriculum, though with increasing age many of them become particularly interested in one or two special fields. About half of them learned to read before they entered the first grade in school, and their precocity of development is often apparent in their mature reading interests. It is of interest to note that routine subjects, like penmanship and spelling, do not elicit their best efforts. Unfortunately, the school and the community have made little effort to provide these brilliant children with educational opportunities which would permit them to develop their great capabilities to the utmost.

It is essential that brilliant children be identified as early as possible. The school nurse and the teacher sometimes find that pupils are coached at home in order to be made to appear brilliant in school. Occasionally, parents teach their

children "tricks" and other meretricious signs of mental acceleration, such as an unusual vocabulary, a peculiar speciality (one little boy could say the Greek alphabet at age four), or parent-prepared school lessons. Hence the diagnosis of brilliance should be made by someone who is expert in giving and interpreting measures of intelligence. An important requirement is that a suitable guidance program be developed for these children. Three provisions have been discussed: an enriched curriculum, "double promotions," and special classes. To each of these suggestions there have been pertinent objections. The so-called enriched curriculum often degenerates into "busy work"; rapid advancement in school lifts the child beyond the school grade where he might establish normal social relationships; and the special class may give these children an undemocratic attitude. In general, the best recommendation is to plan a genuine enrichment of the curriculum by individualizing their program.

All readers of Dickens are acquainted with the warped, maladjusted personality of the so-called "child prodigy." This type of youngster is the result of a sort of hothouse forcing development, initiated and guided by overambitious parents. At an unusually early age such a child is given lessons in music or art; and hence, as the result of precocious coaching, reaches a relatively high level of performance at a time when other children are engaging in normal play activities. The effects of such training are often disastrous in later life; consequently, the nurse and the teacher ought tactfully to dissuade unwise parents from attempts to force the development of normal children. Where true talent exists, of course, it should be fostered and developed; but the determination of talent is best left to an expert in the field of aptitude testing and interpretation.

Some rules or principles for the guidance of exceptional children.—By no means does the foregoing discussion cover all "types" of deviating children. In fact, it is best to regard each child as exceptional and to make a thorough individual study. The nurse and the teacher must be reminded that many educational, psychological, and sociological investigations have been made on large groups of individuals to dis-

cover general trends. What is true of the group as a whole, therefore, may not hold true for any single person in the group. Teachers now appreciate the importance of intensive studies of each individual pupil if they wish to carry out the implications of the new philosophy of education. Likewise, the school nurse will be much more effective if she emphasizes in her work the need for taking into account the essential uniqueness of each child. These rules and principles, therefore, must be understood as broad suggestions, not as infallible prescriptions to be used in all cases. With such reservations, however, some definite statements may be of value.

Treatment of Deviates

Definition.—First of all, it is necessary to ascertain exactly why the individual does not fit into the accepted pattern of the community. In vain have teachers and psychiatrists looked for the "single cause." Elaborate theories have been adduced whereby all deviations from the normal might be explained by an oversimplified point of view. Each of these theories has its adherents, but none of them is generally accepted. Therefore, the initial step is to study the individual closely, without any precommitment to a theory. Maladjustments may arise from many causes, and there may be identical factors in the backgrounds of both well-adjusted and maladjusted persons. Consequently, the use of pseudoscientific terminology and diagnostic labels is of little value. In defining the adjustment difficulties of an individual, the important requirement is to look for the factors which have produced it. When these have been defined carefully, the nurse or the teacher should be able to map out a program whereby the individual might be reoriented to life. Unless this program is carried out, it is, of course, worthless. Files in social service agencies are full of case histories and remedial programs which have never been used in any practical way. Great tact, common sense, practical judgment, and sound experience are essential in diagnosing and defining adjustment problems and in developing and carrying out an appropriate guidance program. In defining a "deviate," therefore, the nurse should be wary of loose terminology and

untenable theories, but approach each case as an individual problem.

Suggestions for dealing with the handicapped child.— **1.** If it is at all possible, the handicapped child should have a normal social environment and be treated like a normal youngster.

2. Although special provision may have to be made, parents, teachers, and nurses must not be too solicitous, sympathetic, or protective. The child must not be deprived of the opportunity to develop self-reliance.

3. Make certain that the handicap is not imaginary. A subject-matter disability in arithmetic, for instance, is often the result of poor preparation; lack of self-confidence; faulty teaching; the presence of a few simple, remediable wrong habits; or bad attitudes—all of which can be removed. Some children learn to assume imaginary ailments from a neurotic parent.

4. All invidious comparisons between normal and handicapped children must be avoided. The child must not be blamed for his defect, whether it be a crippled leg or stupidity.

5. The school program must be so adjusted to the capacities of the child that success experiences are possible.

6. Make use of all the expert advice and supervision that are available in the community.

7. Encourage the enlightened voters and the school board to consider the wisdom of offering a diversified program of education, so that all children will not have to be fitted into one traditional pattern.

8. Seek to arouse community responsibility for financing medical and dental care for handicapped children whose parents cannot afford to pay for it.

9. Give the handicapped child an opportunity to develop his or her special abilities, aptitudes, and interests. The value of compensatory outlets cannot be overemphasized in the guidance of handicapped children.

10. Do not allow any child to feel rejected or excluded because of infirmities or handicaps.

11. Emphasize the necessity for an individual approach to an understanding of the assets and the liabilities of each

child. Avoid, therefore, the use of loose diagnostic labels and "pat" suggestions to fit all cases.

12. Bear in mind the complexity of human personality, and hence do not hope to work miracles in effecting readjustments. On the other hand, do not take the fatalistic attitude that "nothing can be done."

The case history approach.—A simple and convenient technique for making individual studies of deviating individuals is to organize all pertinent information into a special form. Each clinic seems to have its own method for organizing a case history; hence the following suggestions are subject to modifications. This plan, known as the component-factor method,[11] is useful if it serves to emphasize the need for individual study and remedial treatment. Especially is it helpful because it gives numerical ratings, and thus two or three case-history workers may check their evaluations of a given case. The following factors are rated on a seven-point scale: heredity; physical status; mentality; family influence; economic, social, and cultural status; education and training; and self-insight. A numerical rating of 0 on any factor means that the situation is regarded as normal; and plus or minus ratings indicate, respectively, favorable or unfavorable deviations. In using this method, one's aim is not to obtain merely a set of numerical ratings, but to organize the information regarding the individual in such a way as to suggest therapeutic measures.

Two examples of this method will indicate its value, especially when there is an immediate need to organize the pertinent data about a maladjusted person and to develop a remedial program:

There are many plans for organizing case history data.[12] In fact, each clinic and social service agency has devised special methods to meet its particular needs. Occasionally,

[11] For a complete account of this useful procedure in assembling case history data, see C. R. Rogers, *The Clinical Treatment of the Problem Child* (Houghton Mifflin, 1939). An elaborate technique for organizing case history materials into a quantitative form is described by H. J. Baker and V. Traphagen in *The Diagnosis and Treatment of Behavior-Problem Children* (Macmillan, 1935).

[12] A simple and convenient method is described by S. L. and L. C. Pressey in *Mental Abnormality and Deficiency* (Macmillan, 1927), 13-74.

TYPICAL BRIEF REPORTS[13] MADE BY ONE PSYCHOLOGIST ON CASES STUDIED

	−3	−2	−1	0	+1	+2	+3
Hereditary				×			
Physical			×				
Mental			×				
Family	×						
Econ.-Cult.	×						
Social	×						
Educ.-Train.		×					

RECORD SHEET

Name: G. J.
Born: May 4, 1926, Age: 14
Grade: 7
Behavior problems — A surly, fidgety pupil who has little respect or consideration for others' rights.

Brief Description of Facts

Hereditary — Parents both healthy. No serious illnesses evident. Mother very much overweight.

Physical — Usual childhood diseases. Ears, heart normal. Eyes somewhat weak. Teeth neglected. Not too clean in personal appearance. Average height and weight.

Mental — Henmon-Nelson I Q 92. School achievement has been poor.

Family — Mother and father alcoholics. Father took up drinking after marriage. Mother very shiftless, runs around with other men. Child unwanted because an illegitimate.

Economic culture — Mother and family on relief. Parents separated. No family interest in outside activities. Boy has readily admitted that he has done no reading.

Social — Usually travels with older boys who are bad. Is too rough for those at his own grade level.

Educational training — Very much retarded. His writing is practically illegible. Spelling is terrible. Not impossible for him to get along scholastically but he never cared. A "D" student.

Brief Descriptive Diagnosis

His attitude in class is probably due to the fact that he has been plainly shown at home that he is unwanted. Another brother gets all the attention.

Treatment Plan

He needs more understanding from teachers and classmates. This must be encouraged.

[13] This plan is known as the Rogers component-factor method of diagnosis.

	−3	−2	−1	0	+1	+2	+3
Hereditary			×				
Physical				×			
Mental				×			
Family	×						
Econ.-Cult.	×						
Social		×					
Educ.-Train.		×					

RECORD SHEET

Name: M. W.
Born: August 23, 1923, Age: 16
Grade: 9
Behavior problems — A cynical attitude toward school and the classroom. This sometimes makes her difficult to handle, and also influences the attitude of several classmates.

Brief Description of Facts

Hereditary — Health of parents good, although both are confirmed alcoholics. No tendency toward serious ailments evident.

Physical — Normal height. Weight a little above normal. Eyes weak necessitating glasses. Little school absence because of illness.

Mental — Henmon-Nelson I Q 105. She is a "C" student in school.

Family — Father once in jail for robbery. Mother entertains men and partly lives on what they give her. Six children. Squalid surroundings. No conveniences.

Economic culture — Father deserted six years ago. Family on W.P.A. Only thing which can be called a cultural influence is the movies although the lurid type of movies is preferred. Home next to tracks.

Social — Spends most evenings at home in these suggestive surroundings. Sometimes with another girl of said shady reputation. No group contacts.

Educational training — Has been very erratic. Family has moved continually where landlord has become insistent about rent.

Brief Descriptive Diagnosis

The trouble here is plainly in the surroundings. She has, in her formative years, seen too much of the "rawness" of life.

Treatment Plan

To improve the home conditions, and to try to encourage better group contacts for the girl.

in the laudable attempt to collect a great deal of information about the individual, social workers compile voluminous arrays of data. Although such records may contain information which might be helpful in effecting a readjustment, this pertinent material is sometimes hidden under a mass of irrelevant data. It might be better to summarize in a few pithy sentences the information which bears upon an understanding of an individual's difficulties. As yet, the standards for interpreting case histories are meager and subjective. Hence nurses, teachers, and social workers must constantly remind themselves that our ignorance concerning the "man-on-the-street" is great. We do not yet have adequate norms for interpreting the possible significance of minor health problems, family maladjustments, petty thievery in childhood, academic difficulties, and other similar factors in warping personality. Consequently, the important consideration in a case history is not the plan by which the data are organized, but the interpretation and the use of relevant information about the individual.

A point of view.—"Beware of the man who has read only one book," reads an old proverb. To paraphrase this statement, we might say, Beware of the individual who attributes all personality difficulties to a single cause. For example, in discussions of juvenile delinquency some authorities emphasize their own pet theories. Social workers occasionally stress the importance of a broken-home situation, physicians may be impressed by the prevalence of disease symptoms, and teachers may point out the fact that young delinquents seldom make a good adjustment to the public school. Psychiatrists may cite the existence of profound mental conflicts, and sociologists may emphasize the importance of unfortunate environmental factors in producing juvenile delinquency. All these divergent points of view contain partial truths, but none of them presents a clear picture of the whole individual. The guiding principle in dealing with people is to regard each individual as a unique personality. Hence no given theory or manner of approach is equally appropriate to all people. It is, of course, absolutely necessary to have a good knowledge of the generalizations of psychology; but in understanding and helping a given in-

dividual, nurses, teachers, and social workers must thoroughly investigate the background and the present status of a unique personality.

In the following chapter we shall discuss some of the more complex "types" of deviates. Throughout these discussions we are dealing with generalizations and inferences derived from a study of many individuals. Thus, we develop a series of "types" marked by characteristic *syndromes* (patterns of symptoms). Very seldom would we encounter an individual who has all these symptoms which indicate clearly only one diagnostic label. As a matter of fact, each person is an individuality, and hence he or she may exhibit a complex array of symptoms. For example, a patient may be myopic, tuberculous, subject to periodic hallucinations, normal in intelligence, disliked by most of his associates, a high-school graduate, emotionally unstable, superficially religious, and extremely suspicious. Here, then, is a complex pattern of adjustments; hence we say that the patient displays a unique *clinical picture.* It is convenient, of course, to perceive the important syndromes, but we cannot "pigeonhole" this patient. Neither can we use diagnostic labels which set any other person apart from everyone else. In other words, these two chapters present a series of generalizations; but they must not be taken literally to imply that people can be lumped into mutually exclusive categories or that the riddle of personality is solved when technical diagnostic labels are applied.

QUESTIONS AND EXERCISES

1. Is a person *either* normal *or* abnormal? Explain. Is it ever desirable to be abnormal? Justify your answer. Explain clearly the scientific connotation of *normal.*
2. Are there some disadvantages in segregating atypical pupils in public school? What are they, if any? What are the advantages?
3. If there is provision for special classes of atypical pupils in your community, make a visit to them and report fully on the type of school work which these pupils do. Which receives the greater emphasis, conservation of health or mastering the curriculum?
4. How do young children treat those who are physically handi-

capped? Are they sympathetic and understanding at all times? What do you believe to be the effect of physical defects upon personality development? Explain your answer.

5. Could a pupil have a serious visual or auditory disability without knowing it? Would the teacher be certain to know about it?
6. In discussions of "types" of deviates, why is so little attention paid to the brilliant, ideally adjusted individuals? Are such persons atypical?
7. Are some people "born criminals"? Justify your opinion. Visit a so-called "delinquency area" and report upon what you find there.
8. What is the danger in acquiring a set of imposing, technical diagnostic labels? Does it explain a problem individual to call him or her a psychopathic personality? Of what use are such labels?
9. Are there any tricks which a normal, or even a stupid, person could learn in order to obtain a reputation for being bright? What are some of them?
10. Make a careful study of an atypical individual. Point out all the factors which may have made this person unusual in any way. Use the component-factor method to summarize the data.
11. By all means, read several good books which contain case histories. Which impresses you the more, the uniqueness of each individual described or a common factor in certain "types" of cases? Explain fully.
12. If you have the opportunity, try to understand the difficulties of an atypical individual and to assist that person in making a better adjustment to life. What are some of the difficulties which you encounter?

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CHAPTER XII

THE PSYCHOLOGY OF MENTAL DEFICIENCY AND MENTAL DISORDER[1]

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There are three large groups of individuals which, while they are the special concern of psychologists and psychiatrists, offer many challenges for understanding and treatment to the competent nursing student. The individuals who constitute these groups are frequently "ill" in the special sense that their bodily functions are not necessarily interfered with; or, if there is any evidence of unhealthy bodily performing, such evidence is generally regarded as secondary to the disturbing fact that they are psychologically unlike most of their fellows. The difference between such individuals and the "normal" population is to be found in the field of behavior. They do different things or, when they attempt to do the same things most people do, the way in which they perform and the success of their performances are symptomatic of their special condition. We call the individuals who comprise these groups feeble-minded, psychoneurotic, or psychotic.

Physicians and psychologists alike in days gone by were fond of referring to persons who behaved differently as "mentally diseased." This term has, however, been discarded in favor of the concept that, when we are dealing with such people, we are handling cases in which the psychological functions (emotion, thinking, remembering, imagining, understanding, and the like) are either inadequate or have somehow got out of order. When they are inadequate,

[1] The opinions expressed in this chapter are entirely personal and unofficial. They do not necessarily reflect the policies and views of the United States Public Health Service, to which the writer is attached.

we speak of mental deficiency or feeble-mindedness; when they are out of order, we speak of mental disorder, or use terms descriptive of the kind of disorder.

The Nature of Mental Deficiency

Under the category of feeble-minded we include all those individuals who, because their mental development has been arrested, or retarded, or has proceeded imperfectly, cannot be considered capable of competing with their fellows on equal terms, or cannot manage themselves or their affairs with the prudence and caution day-to-day living demands. It is estimated that about 2 per cent of our American population is mentally deficient, and that about 6 per cent is so close to this condition that they require special schooling in order for them to succeed in the simplest tasks and at the most humble stations.[2] A condition affecting so many of our people merits serious consideration.

The causes of mental deficiency.—Feeble-mindedness or mental deficiency is either *endogenous* or *exogenous.* If we speak of endogenous feeble-mindedness, we mean that the causes for such a condition are to be sought in the history of the case *before the child was born;* that is, either while the fetus was *in utero,* or before the child was conceived. When we use the term exogenous feeble-mindedness, we have reference to causal agents acting *during or soon after birth.* Some writers prefer to call endogenous deficiency "primary" feeble-mindedness, and the exogenous type "secondary."

Endogenous feeble-mindedness.—When deficiency is due to factors existing before birth they are either (1) the results of faulty inheritance, (2) the results of poor fetal environment, or (3) attributable to that large area of conditions for which we have no other label than "cause unknown."

Just what the rôle of heredity is in feeble-mindedness we are not prepared to state. We believe that alteration in the germ plasm may result when either of the parents is infected with a disease such as syphilis. What this alteration is and how it is transmitted is not clear. On the basis of the study of Mendelian laws we recognize that recessive traits

[2] J. F. Brown, *The Psychodynamics of Abnormal Behavior* (New York: McGraw-Hill, 1940), p. 340.

may continue, especially where inbreeding is practiced. One author has taken the view that normal intelligence is heritable through the Mendelian unit, and feeble-mindedness through a defect in that unit.[3] Most of the studies of notorious, famous, or degenerate families are disappointingly inadequate because they make assumptions which are not scientifically valid, and thus offer little aid in estimating the mechanics of inheritance in mental deficiency.[4] Tredgold states that approximately 80 per cent of all defectives result from the inheritance of altered germ plasm in which the potentiality for normal development is either absent or interfered with.[5] He points to three general hypotheses which have been expressed by investigators to explain the rôle of heredity. The first he has called "specific gene abnormality," and here he refers to the continuance of defect in the Mendelian unit. The second hypothesis is that of "evolutionary lag," or the theory that in feeble-mindedness we are dealing with a simple type of germ plasm which, in the course of evolution, has remained as it was in the days of our primitive ancestors. The third hypothesis is that of "impaired developmental potentiality," referring to the debility or exhaustion of vitality in the germ plasm, especially in those genes which are responsible for the growth and adequate functioning ability of the brain.

Our conclusion with regard to the influence of heredity in deficiency is that behavioral achievement may be limited by faulty inheritance which operates in ways known to the biologist.

Where the fetal environment is defective we are on surer ground. The environment of the child in the womb is most important. If certain essential nutrient and hormonal materials are not supplied by the mother; if her pregnancy is attended by accident or the appearance of pathology, there is some likelihood that a mentally deficient child will be born. The fetal environment may be disturbed by a variety of factors including chemical, bacterial, mechanical, radioactive,

[3] H. H. Goddard, *Feeblemindedness; Its Causes and Consequences* (New York: Macmillan, 1926).

[4] See the discussion on this point in Chapter X.

[5] A. F. Tredgold, *Mental Deficiency* (6th ed., New York: Wm. Wood & Co., 1937).

and thermal changes. Mongolism, of which we shall speak later, is probably due to abnormal physiological conditions in the mother, and cretinism has been traced to maternal thyroid deficiency.

"Cause unknown" is an all too frequent phrase on our clinical records and indicates, as much as any one thing, the difficulties that confront the scientist who has for his province that most elusive of all studies, the human mind.

Exogenous feeble-mindedness.—Mental deficiency may be caused by incidents and accidents occurring either during birth or in the early years of life. Two large groups of such events can be traced: they are (1) the traumatic, and (2) the infectious. While a child is being born, the delicate cranium is subjected to great pressure. In some cases the immediate effect of such pressure is to cause hemorrhage, and parts of the brain are damaged, the functioning of vital parts of the neural mechanism interfered with or at least prevented from developing in a normal manner. Frequently, too, birth conditions are such that the obstetrician is called upon to aid the delivery with instruments, and there have been cases in which deficiency has presumably resulted.[6]

It seems to be the fate of every clinician to encounter case after case in which parents, upon being questioned routinely regarding their feeble-minded offspring, insist that their child began to act in a deficient manner "after he fell on his head." While it is, of course, probable that feeble-mindedness can originate with trauma to the head, such cases are rare. More often than not solicitous parents rationalize their child's behavior in this manner or, as is even more likely, employ such a formula to absolve themselves and their families from suspicion of taint.

Many infectious diseases, either because they affect the brain or its surroundings directly, or because they entail widespread neural involvement, are responsible for mental deficiency. Among them, to name but a few, are *encephalitis lethargica, cerebrospinal meningitis, polioencephalitis, measles, pneumonia,* and *influenza.* These may cause in-

[6] E. A. Doll, Winthrop N. Phelps, and R. T. Melcher, *Mental Deficiency Due to Birth Injury* (New York: Macmillan, 1932).

flammation of the brain and its meninges and lead to retarded development.

In addition to the traumatic and infectious groups of causative factors, three others can be distinguished. These are the endocrinopathic, the neurological, and the analytic. The former includes those cases, such as *hypothyroidism,* where the glandular equipment of the child does not function efficiently and normal development is retarded because the brain is improperly supplied with nutrient materials. Here also belong instances of pituitary dysfunction leading to *dystrophia adiposogenitalis* (Fröhlich's syndrome) and, occasionally, *gigantism.*

Pathology of the nervous system may be a causative agent in mental deficiency. *Hydrocephalus,* a condition in which the cerebrospinal fluid which nourishes and bathes the brain accumulates to such an extent that the cranium enlarges to grotesque proportions, is a neuropathic entity prominent among this group. *Microcephaly* (small-headedness) and *macrocephaly* (large-headedness, distinguishable from hydrocephalus in that in this instance the entire head including the face is enlarged) are other neurological states associated with feeble-mindedness. *Congenital syphilis* has also been mentioned in this connection.

Finally, certain instances of feeble-mindedness have been ascribed to severe emotional shock. This is a notion that has been popular especially among psychoanalysts. Tredgold, who has had wide experience and is an acknowledged authority in the field of mental deficiency, while admitting that it is theoretically possible that a terrifying experience or other emotional shock may interfere markedly with development, claims never to have encountered such a case. Most authorities support Tredgold's claims.

Kinds of mental deficiency.—Not all feeble-minded individuals are alike. Apart from the endocrinopathic and the neurological types which can be distinguished medically and by their peculiar appearances, there exist kinds of mentally deficient persons who differ particularly in psychological characteristics. That is, they can be separated into classes by what they can do and how they function. Diagnosis is usually accomplished by means of standardized mental tests

and supported by expert observation. There are four main classes of deficiency.

I. *Idiocy.*—The ability of the idiot is comparable to that of the normal child of two years. His IQ is between 0 and 15. He cannot adequately look after himself; he is apt to be uncleanly in his physical habits since he has little or no control over bodily functions and is unable to wash and dress unassisted. Memory and imagination are at an extremely low level; he finds it difficult to obey even the simplest commands. He walks with a clumsy, awkward gait if, indeed, he walks at all. He cannot use language but, like the infant, depends upon simple vocal expressions of satisfaction or displeasure to convey his feelings. Because he cannot exercise ordinary caution, and because he has a low bodily resistance, he is subject to diseases, especially of the infectious variety. Frequently he possesses sensory defects: paralyses and convulsive attacks are not uncommon. His emotional life is blunted and he is likely to be destructive.

II. *Imbecility.*—The mental age of the imbecile is in the range of from three to six or seven years, and his IQ is between 15 to 45 or 50. Like the idiot, the imbecile is recognizable in infancy. From birth they exhibit signs of lassitude and unresponsiveness, or have been overfretful and restive. These characteristics become more marked as they grow older. They show extremely poor muscular coördination, a clumsy and ungainly gait, limited vocabulary. The imbecile is incapable of managing his affairs, but he can be taught to do simple tasks, especially of a manual order. Comprehension and memory are limited. Only rarely can he be taught to read and write. The imbecile fatigues easily and is readily distracted by loud noises, bright colors, or movement. One rather striking attribute is his high degree of imitativeness. Because of the low threshold of attention, employment possibilities are limited, although with proper training and constant supervision an imbecile may perform satisfactorily at low levels. Such supervision is necessary throughout the life-span of the imbecile, and extends to washing, dressing, and feeding. Some imbeciles are destructive and excitable, although most seem placid and easy-going.

III. *Moronity.*—Physical signs such as those which have

been noted for the two lower kinds of mental deficiency are more or less absent in the moron. They are likely to present the same appearance as most people, and this is one reason many of them go through life without ever attracting undue notice. The mental age of the moron is in the range of from six to nine years, and his IQ is from 45 to about 60. If his affairs do not become too complicated, and if he has a family and friends who will look out for his interests and supervise his activities, his condition may remain unsuspected. Often, however, because he lacks control and cannot exercise good judgment, he becomes a social problem. Many morons are used as dupes by clever and unscrupulous persons who seek to advance their own interests without danger to themselves. For this reason, and because the moron is unable to await fulfillment of his desires and hence frequently becomes engaged in petty offenses against the law or commits violent acts, moronism is regarded even more seriously than other deficiency conditions.

Morons live, for the most part, by habit. They are easily distracted, have poor memories, and defective reasoning ability. All of these characteristics are brought out strikingly in testing situations. In addition, originality and inventiveness are almost nonexistent, and the functional area which they are equipped to occupy in the work of the world has narrow limits. They can be trained to do routine tasks of a manual and semiskilled nature, and can also master elementary school subjects such as arithmetic, reading, and writing. They are not creative or constructive, and cannot be relied upon to work without supervision.

IV. *Subcultural or borderline normality.*—The individuals who fall in this group have a mental age of from nine years to about eleven or twelve. The IQ range extends from 60 to 70 or 75. They are capable of completing fifth or sixth grade in school and can maintain themselves adequately in semiskilled occupations which do not demand creativeness. They are generally able to lead normal existences and, if they can avoid entanglement with the law, for the most part remain undetected. All of their abilities are, however, strictly limited.

Distributed throughout the kinds of mental deficiency

just considered, but appearing especially in idiocy and imbecility, are the clinical varieties belonging to the neurological and endocrinopathic groups. We shall consider briefly only the more common types which the nurse is likely to encounter during her professional career.

1. Cretinism.—This condition appears most frequently in geographic areas where there is a natural scarcity of the chief constituent of thyroxine, iodine. It is due to a pathological deficiency in thyroid functioning during infancy or early childhood, and results in certain rather definite physical signs. The cretin is dwarfed and his body is poorly proportioned; arms and legs are short and often malformed. The abdomen protrudes; skin is roughened and coarse, sometimes thickened. The hair is dry and scanty, almost brittle. Lips and tongue are thick; teeth are deformed and subject to rapid decay. Sexually the cretin shows definitely retarded development and seldom matures. Bodily temperature is often subnormal and the extremities likely to be cold or cyanotic. The extent of physical involvement generally corresponds to the degree of mental defect, and the characteristics of the cretin are usually those of idiocy or low-grade imbecility, although milder cases may approach dull normality.

2. Mongolism.—The majority of these individuals function on the level of imbecility, in spite of the fact that the condition has been known traditionally as "Mongolian idiocy." While no offense is meant to the nomad tribes of North and Central Asia, the defectives who bear this name are so called because of their striking physical resemblance to members of the Mongol race. The cause of the condition is unknown, although theories abound. Mongolism has been ascribed to glandular dysfunction, Oriental ancestry, exhaustion of fertility in the mother, and other causes. To see an individual so afflicted once is to be able easily to identify the Mongol again. The eyes are almond-shaped, narrow and slit-like, with an upward and outward slant; eyelids are puffy, and the distance between the eyes is very wide. The skull is small and round, and the face presents a flattened appearance. The tongue usually protrudes, is bright red, and has unusually long and deep fissures. The skin is

dry and chapped; voice is coarse and rough; ears are small; and the lower jaw is generally thrust forward. When asked to be seated, the Mongol will assume a tailor's posture. His joints are hyper-flexible and his gait is shambling. Hair is sparse and brittle. He is subject especially to circulatory abnormalities, and his life-span is short.

3. Hydrocephaly.—It will be recalled that we have already met the hydrocephalic defective and commented on the enlarged head that is caused by excessive secretion of cerebrospinal fluid. His condition has been attributed variously to brain tumor, obstruction, toxic factors, syphilis, and meningitis. The mental state varies from low-grade idiocy to normality, although only a very few ever reach the latter class. Paralyses and epilepsies are often found among such individuals and most of them die at an early age. Their musculature is weak and coördination poor; they are unable to do much physically. In general, hydrocephalics are rather affectionate, loyal individuals and, even in the lowest defective grades, seldom show aggressive behavior or destructiveness. As with cretins, the degree of hydrocephalus is a fair index to the extent of deficiency.

4. Microcephaly.—In this condition the brain is extremely small and does not show the normal pattern of convolutions but is simpler in appearance. The head is likewise small and the skull oxycephalic (cone-shaped). Both chin and forehead recede; hair is thick and coarse. Microcephalies rarely live to an advanced age and most rest at the imbecile level. They are noted for their good natures and their remarkable proficiency at mimicry.

Treatment in deficiency.—The management of the mentally deficient presents many difficulties. Medical and surgical procedures have been tried with the endocrinopathic and neurological groups, but the valiant efforts of the surgeon and the physician have met with little success. In endocrinopathies like cretinism, glandular therapy has been found useful in improving the physical condition of the patient. However, it has never been demonstrated to satisfaction that the mental condition also improves with such treatment. This criticism applies also to cases in which surgery has been attempted. Psychoanalysis of the feeble-minded, aimed to

remove the causes for the emotional blocking that analysts claim is a reason for the condition, reports a general trend to improvement in the social behavior of the patient; but there is no evidence that intelligence is correspondingly altered.

Other methods involve the use of techniques designed to care for the problem in the future, rather than at present. Sterilization of the mentally deficient by a painless and simple procedure that does not result in interference with normal sexual responses but does make conception impossible, is employed in some parts of the country. This is done to prevent the continuance in the offspring of the deficiency. Certain states, such as New Jersey, seek to prevent the feebleminded from mating, or at least require that permission from the state authorities be obtained before a known feebleminded individual can marry. Such methods as the two just mentioned may be regarded as therapeutic from the social point of view, although the individual case is not benefited by them at all.

For the most part, treatment of the mentally deficient consists in education and training. Where their level is suitable, they are taught certain basic subjects, the elementary grasping of which, it is hoped, will enable them to meet day-to-day problems and to keep out of trouble. Instruction is given in simple counting, the recognition of numbers so that they can identify streets and houses, making change, reading signs, writing their names and simple letters. At the higher grades of moronism they can learn to read newspapers and simple stories. Many are taught to perform successfully in uninvolved industrial and mechanical situations, gardening, farming, forms of handicraft, and occupations that are repetitious. A great effort is made in the direction of training defectives to inhibit their more aggressive impulses. In order that such information will remain with the patient, all instruction is aimed toward establishing deeply imbedded habits. Personal hygiene, habits of cleanliness, care of the teeth, the avoidance of infections, methods of clothing and caring for themselves, are made a part of the habit-patterns of the defectives. Sometimes these habits are forced upon them through group games and other forms of play; sometimes the conditioning techniques of reward for

successful performance and punishment for unsuccessful performance are employed. The essential problem is so to train the defective that he can take a place in society within the limits of his deficiency.

Nursing in deficiency.—The nursing care of the mentally deficient depends upon the nature of the case. If the patient belongs to the neurological or endocrinopathic groups, the type of care will be directed by the special needs of the case and the orders of the attending physician. Where other conditions exist, the nurse must be prepared to play the rôles of teacher, guardian, trainer, and mother. Endless patience is demanded. The nurse must understand that the mentally deficient patient is limited in what he can do, and she must be ready to do what is required to make her patient comfortable and keep him from harm. Defectives are often troublesome simply because they suffer from an inability to understand what is required of them, and they will repeat unpleasant performances often enough to try the patience of a saint. Their shortcomings must be appreciated by the nurse, and they must not be blamed nor punished for not doing what it is impossible for them to do. One should also bear in mind that defectives are human and have feelings like those of other people; these feelings should at all times be respected.

The same cautions that the nurse learns to apply in other situations apply also where the patient is feeble-minded. A good maxim is: Where your patient is a mentally deficient individual, it is your job to provide the intelligence and the skill he lacks.

The Nature of Mental Illness

We speak of mental illness where the psychological functioning of an individual is of such a character that his behavior is noticeably different from that of the majority of his fellows. Just as in bodily illness certain activities such as circulation, respiration, or digestion are interfered with or disturbed, so in mental illness the activities of knowing, doing, and feeling are carried out in an unusual and faulty fashion. Where bodily illness produces changes which ren-

der the sufferer inefficient, so mental illness (or more properly, mental disorder) brings about conditions of behavior which hinder adequate adjustment to life-situations or promote a general incapacity for solving life-problems in a socially acceptable manner. The chief characteristic of mental disorder—and the point at which it is most clearly differentiated from physical illness—is that it represents a continuous scale of withdrawal or retreat from reality. As disorders increase in severity, the relation of the patient to reality becomes more and more obscure until, in the severest types of disorder, reality is rejected entirely and the patient is considered to be out of contact.

Beyond distinguishing mental disorder from bodily illness, it is necessary that we further differentiate it from deficiency. We have just seen that in deficiency there was a lack of development evident in psychological functioning. The imbecile and the moron either cannot do what their normal fellows can, or they cannot do things as well as others. They lack, or are deficient in, the proper equipment. With the disordered, however, the equipment is there; but it does not operate in a manner which we can call normal.

The causes of mental disorder.—It is customary to divide all mental disorder into two groups. The terms by which these groups are known reflect the amount of our present knowledge regarding the causative factors responsible for the various types of mental illness within the groups. Those disorders which we know or presume to be caused by structural, physiological, and anatomical factors we call *organic*. Under this term we include all varieties of mental abnormality where the origin of the condition is due to toxic infection, brain injury, bacterial invasion, tissue degeneration or harmful growth, and glandular disturbances. In the remaining disorders, however, we are faced with the fact that, while psychological function is disturbed and normative behavior absent, no organic injury or disease is present. For this reason, the varieties of disorder in the second category are called *functional*.[7]

The causative factors in functional mental disorder rest

[7] The student should bear in mind that the use of the term "functional" does not mean that the question of organic involvement in the disorder has

entirely, so far as we know, with the effects of environment upon the growing and maturing individual. Severe emotional shock, terrifying life-experiences, the enforced denial of deep-seated wants, faulty habit formation, abnormalities of the learning process; all of these are regarded as contributory factors.

The appearance of a specific disorder either in the functional or organic groups means only that the functional or the organic factors seem to play a dominant rôle in the production of that disorder. It does not mean that all the factors involved are necessarily organic or functional, as the case may be. As a matter of fact, any worker in the field would be hard put to it to explain any given disorder solely in terms of either functional or organic factors. Even where definite evidence of infection, for instance, exists, we must remember that we are dealing with a complex entity, the human personality, having behind it a definite but varied history.

The classes of mental disorder.—Deviation from the normal in the field of behavior extends along a continuous line from the very mildest behavior syndrome to the wild and bizarre action-patterns of utter madness. At the lower end of the scale we encounter the milder disturbances of knowing, feeling, and acting which are sometimes called the "minor mental maladjustments." Here are included such items as forgetfulness, stammering and stuttering, faulty muscular habits, sleep disturbances, feeding problems in childhood, distractibility, temper tantrums, destructiveness, rapid mood changes, and certain quantitatively different sexual habits. Here, too, are included the almost inexhaustible varieties of minor personality deviations, as well as the similarly extensive list of variant patterns of response to physical and social stimuli.

At the next and more serious stage of disorder our attention is directed to the socially harmful kinds of behavior such as delinquency, truancy, and conduct irregularities, and to personality problems resulting in difficulties for satisfac-

been settled. On the contrary, many investigators feel that even in these cases structural impairment is present but we have not yet developed techniques and instruments refined enough to locate the site of pathology.

tory adjustment to society. Under the latter are included feelings of inferiority or superiority, hypersensitiveness, social negativism and withdrawal from social contacts, the milder delusional habits of thinking, specific disorders of the various senses, qualitative and quantitative sexual aberration, brutality and aggressiveness, and uncontrollable behavior of the impulsive order leading to conflict with individuals or authority.

The psychoneuroses, of which we shall have considerably more to say, are next in order of seriousness. These include such conditions as hysteria, psychasthenia, neurasthenia, and anxiety. In such states there is partial involvement of the personality in a way that makes adjustment to life and its complexities extremely difficult and rarely completely successful.

Insanity is, of course, the most serious kind of mental disorder. The psychotic individual is completely out of touch with reality in such a manner that his whole personality is involved. It can be stated emphatically that, because of the involvement of the total personality, the world the psychotic inhabits is, depending upon the nature of the psychosis, completely different from the world in which the bulk of humanity exists. The behavior of such individuals is odd, extravagant, and, in general, strikingly at variance with ways and patterns of life demonstrated by the more normal members of the population.

The diagnosis of mental disorder.—The diagnosis of mental disorder is always the first step in treatment.[8] Diagnostics attempt to provide a convenient classification for the disorder so that the best therapeutic measures may be applied. The techniques of diagnostics are aimed to collect as much information as possible regarding the patient in terms of his physical, nervous, emotional, and mental status. A thorough physical examination is a necessity. This includes, in addition to the routine items usually covered, a detailed study of glandular functioning, waste products, metabolism, blood, and spinal fluid obtained through lumbar puncture.

[8] The writer wishes to express his appreciation to Louis S. Schlan, M.D., for his assistance and aid with the text of this chapter, especially with the sections on treatment and nursing care.

The nervous system is scrutinized closely by way of a neurological examination covering superficial and deep reflexes, postural habits, speech performance, and the condition of the cranial nerves. Intelligence, aptitudes, interests, and attitudes are surveyed by tests and measures. All the psychological functions are investigated and observed in performance. An attempt is made to factor out delusions, hallucinations, abnormalities of thought and memory; and finally the amount of judgment and insight exercised by the patient in his affairs is estimated. Data on behavior such as facial expression, movement, and rate of response are noted. All that is obtained is supplemented by, and gathered together in, a case history which includes data obtained from other sources such as social service agencies, members of the patient's family, friends, teachers, employers, coworkers, and private clinicians who have been consulted previously. When complete, beyond the information which we have already indicated, the case history contains an account of the life-course of the patient and his family, social, educational, and vocational histories. It encompasses also an account of the temporal development and the special features or symtoms of the present illness.

With the completion of this task the clinician is ready to achieve a diagnosis of his patient's condition. This he does by carefully weighing his material against his knowledge of the pictures presented by each of the disorders and eliminating those conditions that are not comparable to the case in hand. If pathology is present he may find the most adequate diagnosis among the organic disorders; if a causative factor cannot be found, he will search among the functional disorders for a proper classification. The experienced clinician is adept at recognizing certain behavioral patterns which keynote specific disorders and thus provide valuable clews to correct diagnosis.

Treatment in mental disorder.—It was stated earlier that diagnosis is the first step in treatment. After a particular case has been diagnosed correctly, the classification arrived at will determine the next therapeutic stage. This is because, as one would expect, certain types of disorder have been found to respond only to special varieties of treatment

and not to others. We can distinguish four main therapeutic avenues to the mental disorders. They are: (1) psychotherapy, (2) sedative therapy, (3) shock therapy, and (4) medical therapy.

Psychotherapy.—Many methods of approach to the disordered personality fall within the area of the techniques we know as psychotherapeutic. One of the most promising is the method of *psychoanalysis*. The use of this procedure is limited to patients of rather high intelligence who do not betray dangerous symptoms and are under about fifty years of age.[9] Results so far indicate that the minor mental maladjustments, the conduct and behavior disorders, and the psychoneuroses respond very well to psychoanalysis; but the method has yet to demonstrate its usefulness in the field of the psychoses.

Briefly, the analytic procedure is an attempt to recapture and bring to light early and repressed memories through the use of free-association and dream analysis. The patient is encouraged to associate aloud in the presence of the analyst who, after he has begun to amass sufficient information, interprets what the patient has produced and applies his interpretations to the patient's behavior.[10] A central part of the method concerns the ability of the patient and analyst to enter into an accord which will be productive of a peculiar type of confidence called "transference." This is a reciprocal situation which serves as a barometer to the progress of treatment, and upon its strength depends the willingness of the patient to accept the analyst's explanations for his symtoms and behavior. The technique is, on the whole, far too complex to permit of discussion in our limited space. Since psychoanalysis, both as a therapeutic mode and a philosophy, has entered so widely into almost all fields, it is recommended that the student supplement this brief account with further reading.[11]

[9] O. Diethelm. *Treatment in Psychiatry* (New York: Macmillan, 1936), p. 63.

[10] S. Freud. *Introductory Lectures on Psychoanalysis* (London: G. Allen & Unwin, 1929). Also, Freud, *New Introductory Lectures on Psychoanalysis* (New York: W. W. Norton & Co., 1933).

[11] *The Basic Writings of Sigmund Freud,* Modern Library Edition, A. A. Brill, (ed.). This volume is suggested for a comprehensive and general view of the field of psychoanalysis.

The methods of *suggestion,* both direct and indirect, play a distinct rôle in the treatment of disorder. Reassurance and encouragement often tide the patient over difficult periods or aid him in formulating and carrying through a determination to meet life-situations in a healthier manner. The value of such methods depends in a large part upon the prestige of the therapist and his expert control over the clinician-patient situation. *Auto-suggestion,* or the method of self-encouragement and assurance, is also of aid where a conviction of the truth of the suggestion has been established. *Hypnosis* is a suggestive technique of wide application. Its especial use is twofold. In the first place, it is a means whereby patients may be led to disclose incidents and memories of etiological (causative) value; and, in the second place, suggestions for healthier attitudes and ways of behavior can literally be grafted on to the personality in the hypnotic state. The latter is often referred to as "post-hypnotic suggestion." Indirect suggestive techniques include the pretended administration of drugs or the sham staging of surgery. The use of the latter is limited to unsophisticated patients with functional disorders of more or less uncomplicated types.

Two other psychotherapeutic procedures are those of *desensitization* and *reëducation.* They are infrequently employed separately but are spoken of individually as a matter of emphasis upon two aspects of a helpful aid to therapy. Desensitization consists in attempting to persuade patients to face feared situations, and reëducation refers to attempts to retrain patients to respond to such situations in a normal and objective fashion. Both procedures stem from the premise that the disordered type of behavior is the result of faulty habit-formation.[12] Upon repeated presentation of the feared object or event abnormal habits of response diminish with familiarity and new response-habits emerge. Reëducation is similar to primary or initial education and the same instructional techniques that have been found useful in the classroom prove of benefit in the clinical situation.

Occupational therapy and *recreational therapy* are also

[12] K. Dunlap, *Habits: Their Making and Unmaking* (New York: Liveright, Inc., 1933).

valuable aids to the treatment of mental disorder. The former includes the application of certain principles of work to the various classifications of illness. The patient is studied carefully and an occupational program based upon the particular needs of his case is outlined for him. This program may concentrate his attention upon something apart from himself, keep him busily engaged in useful and interesting work, leave him less time and energy for the cultivation of thoughts and activities outside the normal range. So, for instance, the withdrawn patient may be put to work on a group task designed to stimulate his interests and gradually aid his return to the real world. Manic and excitable patients may respond to occupational tasks having a lulling and sedative effect. One of the chief benefits of occupational therapy lies in its ability to provide the success factor which is so often crucial in restoring confidence in self and justifying the continuance of effort on the part of the mentally disordered. Many patients have been restored to health by achieving success in crafts like metal work, rug-weaving, basket-making, and woodwork. One of the important assets of occupational therapy lies in the fact that it approaches the normal life-situation and daily rhythm of existence outside the hospital gates. Recreational therapy, besides benefiting in somewhat the same manner as occupational therapy, introduces the necessary social factors and contact with others that the mentally disordered so frequently lack and, in addition, provides both competitive and coöperative situations for reëducative purposes.

Sedative therapy.—Certain disordered conditions where overactivity is prominent require the medical administration of sedatives. Where such measures are employed we should speak of management rather than of therapy. The practice of introducing drugs is generally avoided. Sometimes, however, for purposes of restraint, where possible harm to others and to self exists, artificial means for promoting quiesence are necessary. One method for control and treatment which is rather widely employed and which avoids the hazards of drugs is the technique of *hydrotherapy.* In its broadest sense hydrotherapy refers to the use of water in a remedial manner in conditions of disorder. Many effects such as

stimulation, elimination, and sedation are obtained by varying the temperature of the water, the way in which it is applied, the force of application, and the duration of treatment. Cold, wet sheet packs and baths of neutral temperature are utilized to subdue excitements: stimulation in depressed conditions can be obtained through variations of hydrotherapeutic technique. A special benefit occurs in the use of the neutral bath in cases of agitation and excitement. The phase of exhaustion following tension can be avoided through the preservation of physical strength that results under successful and satisfactory hydrotherapeutic conditions.

Shock therapy.—Within recent years there has been widespread application of a method literally designed to "shake loose" an individual from the disorder with which he is afflicted. Convulsive spasms are induced by the injection into the patient of certain chemical compositions such as metrazol and insulin. The seizure produced is epileptoid and is followed by coma. Notable success with this method has been claimed, but it is too early to evaluate it properly as yet. The disorder in which shock therapy seems to meet with most success is schizophrenia, which we shall discuss under the psychoses.

Medical therapy.—Since many abnormalities of knowing, feeling, and acting are directly attributable to pathological states of the body, the treatment of such conditions is entirely a medical problem. Medicinal and surgical therapy depend, of course, upon the specific condition to be treated and have much to offer in the field of the organic disorders. Especially is this true in cases where the patient is likely to harm himself or to neglect himself to such an extent that he constitutes a serious risk. One all-important therapeutic rule is to the effect that the mental patient should be kept physically fit. The observance of this rule calls for expert medical surveillance.

Nursing in mental illnesses.—The greatest caution and the highest skill are called for in the nursing of mental patients. The job requires courage, alertness, and patience. The nurse's management of the patient may be a crucial factor in recovery, and her position is such that she can influ-

ence or retard progress. The nurse-patient relationship should always be maintained on a satisfactory level. As a matter of fact, frequently such a relationship can be exploited in a therapeutic way under the guidance of the supervising clinician. In the mental disorders nursing extends beyond the care-and-comfort themes of bodily illness. Two general rules obtain throughout the entire range of mental illness. The first rule is that the nurse must in every case seek to understand her patient's personality, his interests, his likes and dislikes, and his peculiar habits of behavior. The second rule is that the nurse must be prepared and equipped to take care of any situation which may occur during her time of duty.

The Psychoneurotic

The outstanding feature of the variety of mental disorder which we label *psychoneurotic* is its commonness. Everyone at some time during his life is subject to psychoneurotic episodes of varying intensities. Such periods usually occur before, during, or soon after those times of great biological or social stress such as puberty, entering professional life, marriage, pregnancy, and the menopause. A professor of the writer's acquaintance, long a sufferer from psychoneurosis, once stated that these attacks are so frequent with him that he can actually predict from hour to hour and day to day just what changes will take place in his condition, when symptoms would appear, and what those symptoms were to be. Not everyone is, however, so fortunate as to escape with occasional neurotic episodes; for some individuals this form of disorder is intimate and lasting, effecting profound changes in their lives and abilities to enjoy work and leisure.

The designation of psychoneurotic is applied to those cases where only a part of the personality is affected to the extent that a normal and healthy adjustment of the individual is impossible. In the psychoses, as we shall see, the whole personality is affected and the patient is definitely out of contact with reality. The psychoneurotic, however, maintains good contact with the environment. Another distinguishing feature is that, in the psychoneuroses, there is often

a bodily or mental disturbance which does not result from some structural or anatomic lesion. Such patients will complain of discomfort and pain where the most minute examination will fail to disclose injury or pathology. Nevertheless, to the patient the pain is real, and he suffers *as if* a structural lesion were present.

Fear is the outstanding characteristic of the psychoneuroses; and this fear intrudes itself into every act and thought, impairing the efficiency of the patient, making his days long and wearisome, his presence often a burden to family and friends because of his irritability and complaining. For the patient himself, existence is a torment.

The kinds of psychoneuroses.—Authorities differ markedly on the question of the main groups into which psychoneurotic disorders fall. This is because no scheme which has yet been proposed meets with everyone's approval. For our purposes, however, the most convenient manner in which to survey the field is to divide the psychoneuroses into four large groups based upon similarity of symptoms. Accordingly, we shall speak of neurasthenia, psychasthenia, hysteria, and the anxiety states.

The symptoms and causes of neurasthenia.—The most characteristic feature of neurasthenia is a general and all-pervading feeling of physical and mental fatigue. The neurasthenic is always tired. Even when he has had a good night's rest he is tired. As a matter of fact, he feels more tired in the morning and is likely, by bedtime, to be less fatigued than when he awoke. His mental state is one of depression and he is intensely preoccupied with himself. Flow of ideas is impaired, attention limited, and irritability a constant sign. The neurasthenic is also *hypochondriacal.* That is, he shows excessive concern over minor physical ailments, occasionally imagining he is afflicted with organic illness that is, medically speaking, not present. Upon examination one frequently finds anæsthetic areas on his body where he is insensitive to pain or, on the other hand, one may discover areas that are hypersensitive. Some of the more common complaints in neurasthenia are headache, pressure feelings on the head, pain in the back of the neck, eyestrain, spots before the eyes, blurring of vision, general-

ized aches and pains, backaches, feelings of weakness in the legs and arms, loss of appetite, indigestion, constipation, palpitation, profuse sweating, hot or cold flashes, perception of lump in the throat and inability to swallow, and shortness of breath.

Neurasthenia may actually be due to overwork, although this is a rare cause. Frequently it arises out of feelings of inadequacy, where the patient, by producing symptoms, escapes from meeting the demands his work or social obligations make upon him. A cause found more often is the patient's inability to meet and solve his problems resulting in a turning of attention inward and upon bodily processes. The condition may also be due to prolonged emotional strain for which no other outlet has been discovered. Followers of Freud and his school claim to have traced neurasthenia to conflict over the discarding of certain sexual habits, notably masturbation.[13] Inheritance of a nervous system easily subjected to the strain of modern life has also been suggested as a cause for psychoneuroses of the neurasthenic group.

The symptoms and causes of psychasthenia.—Obsessions, compulsions, and phobias are the outstanding symptoms of psychasthenia. An *obsession* is defined as a constantly recurring idea which the patient recognizes as irrational and unfounded but from which he cannot free himself. These ideas are usually morbid and always unwelcome. They persist tenaciously and lead, very often, to ritualistic behavior of a compulsive order. *Compulsions* are irresistible tendencies to perform meaningless motor acts which the patient recognizes as irrational but which he is compelled to carry out. Compulsions frequently arise from obsessions in that they are designed to prevent the recurrence of the obsessive idea or else to substitute for the activity with which that idea is concerned. Thus the individual student who is obsessed with the idea of failure may be compelled to climb every staircase by avoiding each third step in the hope that this will bring him luck on his examinations. Extreme compulsions are *pyromania* (impulse to set fire to things), *klepto-*

[13] S. Freud, *Collected Papers* (The International Psychoanalytical Library), Vol. I, No. 7,

mania (impulse to steal), and *dipsomania* (impulse to drink). Obsessions run from the mildest, such as the persistence of a line of poetry that "sticks in the head," to the most severe, such as the persistence of an idea to engage in mass poisoning.

Phobias are defined as morbid, abnormal fears. Some of the more common phobias are *zoöphobia* (fear of animals), *claustrophobia* (fear of closed places), *ochlophobia* (fear of crowds), *agoraphobia* (fear of open places), and *acrophobia* (fear of high places). When, in spite of precautions, an individual is brought into a situation about which he has a phobia, he is likely to present the same symptoms which we have already described for neurasthenia. Hypochondria and feelings of inadequacy are also symptomatic of psychasthenia.

Obsessive-compulsive behavior is usually due to a conflict over a desire and a fear. The obsessive idea is thought to mask—but to be related to—some deep-seated desire of the patient, and by its persistence so to occupy the individual that this thought will not occur. The compulsive act has the same design. It serves to occupy the individual so that he will not perform the activity in which he desires to engage. The desires which obsessions and compulsions protect against are repressed memories of intensely emotional childhood experiences frequently of a sexual kind. Beyond this, much of psychasthenic behavior is attributable to the formation and continuance of faulty habits. Janet, an early writer on this variety of neuroses, attributed psychasthenia to partial disintegration of the personality (dissociation) due to a lack of "psychic energy." [14] The phobias seem to originate in childhood memories of unpleasant and fearful experiences from which certain items have been isolated and carried over into adolescence and adulthood.

The symptoms and causes of hysteria.—Of all the psychoneuroses hysteria is the one which has probably received the most attention. Essentially, it is a condition which is characterized by behavior and organic manifestations presenting the appearance but not the reality of serious bodily or mental disorder. Hysterical symptoms may simulate practically all of the symptoms or conditions of illness to which the hu-

[14] P. Janet, *Les obsessions et la psychasthenie* (Paris: F. Alcan, 1903).

man organism is subjected. Often it is difficult to distinguish hysteria from organic disorder, and this creates a bothersome problem in diagnostics for the clinician; but the general rule is that the hysterical symptoms are inconsistent, variable, and do not adhere to anatomical patterns.

The symptoms of hysteria are numberless and may be sensory, motor, or entirely mental. In the sensory sphere we find anæsthesias, hyeræsthesias, and paræsthesias (distortions of sensitivity). Hysterical patients may complain of disorders in all senses, but audition and vision claim the greatest number of cases, with hysterical blindness in the forefront. In the motor sphere we meet paralyses, tremors, contractures, and tics. The latter are disturbing muscular habits such as facial twitchings and spasms. In the so-called mental sphere we are presented with amnesias (prolonged periods of forgetting), somnambulisms (ambulant behavior during sleep), trances, fugues (clouded states of awareness of self and surroundings), and the form of epileptic seizure known as essential or idiopathic epilepsy.

The causes of hysteria are not too well understood, although here as elsewhere theories abound. Unquestionably the development of an hysterical symptom represents a way out of a conflict situation. This is particularly evident in times of war when persons suddenly develop debilitating conditions which serve to render them unfit for active service. The development of a symptom on a hysterical basis is also a means whereby a person can obtain what he wishes. Here the writer is reminded of the case of an elderly woman whose husband had suffered an illness which prevented him from working. For two or three years this woman did all her own work and her husband's as well. She would often complain that the burden of work was too much for her and that, were it not for the additional expense and the strain it would make on the family budget, she would hire someone to help her around the house. On a certain morning she awakened with severe pains in her legs and could not manage to get out of bed. Her physician, after a complete physical examination which brought nothing to light, decided the condition was psychoneurotic; but the fact remained that the woman could not leave her bed. On the

day after the first symptoms appeared, the housework was taken over by a competent servant. Now the employment of help came under the heading of "necessary expenditure."

Another cause for hysteria is said to derive from partial repression of some real or fancied sexual trauma (shock) of childhood. Since the repression is incomplete, symptoms may develop in later life following some emotional shock. This is a view current among psychoanalysts. Janet, whose work on hysteria was monumental, believed that hysterics were individuals who, because of heredity, never developed a normal personality synthesis and thus were prone toward dissociation of those ideas and functions which make up the personality. Extreme emotional shock also is believed to play an important rôle in hysteria.

The symptoms and causes of anxiety.—The condition of anxiety is recognized by the expression on the part of the patient of vague fears and apprehensions. The individual is afraid, but he frequently cannot label his fear. The anxiety is "free-floating," accompanied by physical symptoms such as tachycardia, respiratory distress, and insomnia. The most common fears are those of death and insanity. The patient shows signs of irritability; he is unable to concentrate and his mood alternates between excitement and depression.

The cause of anxiety is to be found in the life-history of the patient. Often this condition appears where the individual's strivings for self-assertion cannot be satisfied, not only because of personal limitations but because of external conditions. Anxiety has also been discovered to originate in the sexual life where satisfaction of basic desires is insufficient; surplus excitement works itself out in symptoms.

The causes of the psychoneuroses.—Beyond doubt, the most frequent cause for disorder of the psychoneurotic variety is conflict between desires and ambitions of the individual involved and the prohibitions imposed by society. These desires or wants are sometimes highly personal and extend far back into early childhood. They may be thought of as the predisposing conditions which lead to the development of symptoms when the individual is subjected to emotional shock, or when he has reached the limit beyond which he cannot continue to repress any longer with complete suc-

cess. Another cause is the continuance of faulty habits of responding to life-situations long after these habits should have been substituted for by more socially desirable ways of behavior. Heredity has also been suggested as a cause for psychoneuroses; some writers expressing the view that the disorder occurs only in those who, because of poor heredity, cannot ever develop personalities capable of coping with life's complexities.

A fascinating field for study is found in attempting to answer the question, Why does a certain psychoneurotic individual pick upon just this particular symptom or group of symptoms? There are two possible answers. In the first place, most workers recognize that the symptoms presented by the patient usually bear some relationship either to the precipitating experience that first called out the symptoms, or directly to the memory, desire, or wish that is being repressed. This explanation held in the case of the patient who suddenly developed a severe contraction of the first three fingers of his right hand without apparent physical cause. While he was under treatment for this condition by the writer, he recalled that in his fourth year he was struck violently across these three fingers by his father who came upon him rummaging through a drawer where the father kept his old service pistol. The child had been repeatedly warned away from this drawer. It also developed that the present attack occurred while the patient, now an adult, was hastily reading his wife's old love-letters from former beaus. He found these letters in a drawer of his wife's bureau during her absence. The situation was much like the one that took place in his childhood and was added to by the strength of his jealous emotion.

Another reason for the choice of specific symptoms is found in the fact that such a choice frequently represents a familiarity with, and concern about, a particular condition for a long period of time, usually dating to early childhood. Another of the writer's patients suffered severe attacks of asthma that were hysterical in nature. The reason he was afflicted with asthmatic and not gastric or circulatory symptoms appeared when he recalled that his father had died of a respiratory disease, his mother's father had died of another

respiratory condition, and his mother had been afflicted with intensely wearing attacks of hay fever. During his childhood and youth she had always demonstrated extreme concern over colds and coughs, and was especially oversolicitous with regard to other respiratory ailments. Consequently he knew more about such conditions because they had played an important part in his life-history.

The diagnosis of psychoneuroses.—The diagnosis of psychoneurotic is always one of elimination. That is, such a diagnosis should be made only after every other possibility has been considered. All too frequently a hasty diagnosis of neurasthenia or hysteria results in serious neglect of some basic organic malady or lesion. When the diagnosis has been made, it should then be supported by the objective findings of personality scales and measures.[15] It should never be made without a close examination and a prolonged study of the life-history. The forms of psychoneuroses provide many clews to diagnosis. The psychasthenias present obsessions and compulsions whose strength and reality appear on examination, direct observation of behavior, and continuous emphasis on life-history. Neurasthenia is marked by fatigue and a complexity of variable, inconstant symptoms. The hysterias abound with diagnostic leads. The physical signs are transient, are not present during sleep or utter relaxation. Symptomatic patterns do not follow underlying anatomical and physiological conditions, nor do they endanger the life and well-being of the hysterical patient. The hysterical blind manage to avoid obstacles and the hysterical deaf manage to hear what they are not supposed to hear. The expert diagnostician has many devices for establishing the nature of the condition with which he is presented.

Treatment of the psychoneuroses.—The psychoneurotic is amenable to psychotherapy. He cannot be aided, so far as we know now, by medication or surgical interference. Symptomatic pain may sometimes be alleviated by analgesic preparations and the patient may be put more at ease with sedatives; but cure cannot be accomplished. As a matter of

[15] *The Rorschach Psychodiagnostic Ink-Blot test,* for example, is an excellent tool in the diagnosis of psychoneuroses.

fact, it is generally agreed that medicine and surgery hinder the therapeutic process by lending support to the neurotic's mistaken notion of the presence of organic disease and, actually, reënforce the psychoneurotic condition, driving the symptoms and associated attitudes to ever deeper and more inaccessible depths.

Since a psychoneurosis always means a conflict, the theme of treatment—no matter what psychotherapeutic approach is employed—is the reliving of the conflict by the patient. He must be led to recognize the conflict and then to reëvaluate it. Once he has reëvaluated it, the faulty habits of thought and behavior which were a part of the psychoneurotic picture must be substituted for by the encouragement of healthy attitudes and patterns of response. The assets which the personality presents must be employed in the new synthesis which makes the most of them; while the liabilities have to be discounted or, at least, rendered less effective. For such a job, psychoanalysis is the treatment of choice. Desensitization and reëducation are definitely to be considered therapeutic possibilities, and direct and indirect forms of suggestion also have a place.

Nursing in the psychoneuroses.—When dealing with psychoneurotic patients it is all too easy to forget that, while an organic component and cause may be lacking, the patient is experiencing real pain and discomfort. The nurse should be wary of viewing the psychoneuroses and psychoneurotics disparagingly. The term neurotic is bandied about a good bit in the newspapers and by half-informed novelists. It has somehow acquired an aura of contempt and a rather shameful connotation. Such an attitude is foreign to the nurse, who should attempt to understand her patient. She would be mistaken to try to argue the patient out of his symptoms and, anyhow, that is not her job. She must attend to her patient's wants but guard against oversolicitousness. She must listen sympathetically but withhold her advice. She must expect to meet with criticism from her patient and to be constantly in an atmosphere of irritability and overanxiousness. A large part of her duty will be in assisting the therapeutic process of reëducation with calm objectivity and efficiency.

The Psychotic

The most serious type of mental disorder from which an individual can suffer is insanity. The *psychoses* (varieties of insanity) are characterized chiefly by complete withdrawal from reality and by unusual symptomatic behavior in the fields of thought, feeling, and action. The disturbances of personality in the psychoses are severe and marked. They include the total individual and do not remain confined to a single sphere of activity.

In general, it is convenient to divide the psychoses into those in which it is possible to demonstrate anatomical pathology, *i.e.,* the organic psychoses; and those for which it is impossible to produce predisposing bodily causes, *i.e.,* the functional psychoses. Under the organic psychoses we will consider the four chief varieties as they are likely to appear clinically. They are: (1) the psychoses with organic brain disease, (2) the toxic psychoses, (3) the psychoses with systemic disease, and (4) the traumatic psychoses.

The symptoms and causes of psychoses with organic brain disease.—Here the nervous system, and especially the higher centers, has been damaged either by deterioration or bacterial and virus invasion to the extent that normal behavior is absent. One such condition is *meningo-encephalitis* or *general paresis.* Because the central nervous system has been invaded by syphilis, normal functioning is impaired. Beyond the physical signs and laboratory evidence of central nervous system syphilis, there is progressive deterioration in intelligence as well as in the emotional or affective response to the environment. The chief clinical signs may be in the motor sphere where there is incoördination, tremor, speech disturbances, inequality of reflexes, and sometimes convulsive seizures. Psychologically, there is an almost complete reversal of personality traits. Memory is markedly defective, and frequently the patient becomes euphoric (exalted and expansive in mood). This condition never occurs in patients who have not previously been infected with syphilis.

Another type of psychosis in which the brain is involved is that which is precipitated and accompanied by *cerebral*

arteriosclerosis. This is a state wherein there is interference with the cerebral circulation attended by various behavior symptoms. Patients who suffer this disorder are middle-aged or elderly. The condition usually begins with some type of seizure and is followed by inability to concentrate, loss of memory, general intellectual deterioration, confusion, and extreme emotional instability. The patient is often markedly irritable and frequently expresses paranoid suspicions.

The various *senile psychoses* may also be included under this classification. The symptoms are well known to most people: they are characterized by regression to childhood levels in all fields of functioning. Causative factors are to be sought in the progressive deterioration and debilitation of bodily organs and processes. The higher centers of the brain, since they are the latest to evolve biologically and to function developmentally, are the first to succumb in senility.

The symptoms and causes of toxic psychoses.—Alcohol, poisons, and drugs are often causes of mental disorder. Their action is organic in that they bring about damage and promote pathology in tissues and anatomic parts. The first and third of this trinity, alcohol and drugs, are not only causes but also symptoms of disorder. This fact must be kept in mind by the student and especially by the diagnostician.

The alcoholic psychoses include *delirium tremens, chronic alcoholism,* and *chronic alcoholic delirium* (*Korsakoff's psychosis*) among other, less frequently encountered, conditions. As is suggested by the name, the outstanding symptom in delirium tremens is generalized tremor especially of the fingers, facial muscles and tongue, and a delirious state. Sleep, if at all possible, is attended by horrible nightmares. Hallucinations, especially in the visual field, are a commonplace. The most frequent hallucinations, induced by disorders of sensation, are of snakes, rats, and elephants. The patient is restless and fearful, often completely disoriented. Sometimes, urged by the hallucinations, there is attempted suicide or homicide.

Chronic alcoholism, occurring in the habitual drinker, is accompanied by intellectual deterioration and changes in

character. Physical signs include tremor, disorders of the circulation and digestion, generalized arteriosclerosis, organ defects such as cirrhosis of the liver. Judgment is definitely impaired; there is a loss of memory; the patient becomes shiftless, irresponsible, and careless. Moral inhibitions are lacking and the chronic alcoholic presents a picture of debility and degeneration.

In chronic alcoholic delirium the central sign is loss of memory for recent events, disorientation, visual and auditory hallucinations, lack of insight, and frequent physical symptoms such as pain and tenderness over the nerve trunks and certain muscular regions. Prognosis for recovery is poor, and even in those cases which are said to recover, there is always an underlying residue of deterioration.

A certain group of psychotic conditions are contributed to, and find their origins in, poisoning of the nervous system by prolonged exposure to such substances as lead, arsenic, mercury, and the poisonous gases. These are sometimes referred to as the *occupational psychoses* because they so often occur in employment situations. The mental state does not differ very much from that which we have described for chronic alcoholic delirium. The physical condition is marked by gastrointestinal and peripheral nerve symptoms.

Other psychoses are precipitated by the use of drugs. The primary problem involved in these cases is not the fact of drug usage in itself, but the reason for resort to drugs in the first place. It is often found that drug addiction is symptomatic of some deeper personality difficulty or conflict. One example of psychoses due to drugs is found in opium and its derivatives. Physical symptoms include digestive disturbances, pronounced contraction of the pupils, dryness of hair, mouth, and skin. Psychologically, there is evidence of inability to attend, poor memory, increased imagination, and active fantasy-life. The addict is irresponsible and shiftless, resorting to every means, even murder, to obtain the drug. Ideas of persecution are common, and pathological lying of an extreme degree is often typical. The withdrawal symptoms (symptoms which appear when the addict is deprived of the drug) are severe. There is generalized trembling, a sense of impending doom, vivid and acute

visual and auditory hallucinations, inability to sleep and restlessness. Other drugs, such as the barbiturates and their derivatives, are included under the toxic psychoses as etiological agents.

The symptoms and causes of psychoses with systemic disease.—In this group are included all those conditions which have underlying pathology in the great bodily systems. Certain of these conditions are precipitated by infectious disease, others by disease processes affecting various organs, yet others by disturbances of functioning in the bodily routes of supply and removal. In the latter group we find the disorders associated with glandular disturbances. One outstanding condition is *hyperthyroidism.* Here, because of the excessive secretion of thyroxin, the physiological functioning of the body is speeded up. Physical signs include rise in temperature, rapid pulse, flushing, and other symptoms. Overactivity results, and this is apparent in all aspects of the patient's performing. He becomes irritable, suffers wide swings of mood, is unable to relax. Anxiety is central to the clinical picture, and this is attended by feelings of unreality and delusions of persecution. Because of the tremendous drain so much activity makes upon the patient, he becomes haggard, emaciated, and frequently borders upon collapse from exhaustion.

Other psychoses with systemic disease are found among the meningeal disorders, the choreas, the cardiovascular-renal group, those disturbances associated with epidemic encephalitis, and other febrile, infectious conditions.

The symptoms and causes of traumatic psychoses.—Sometimes a psychotic condition will follow upon injury to the head. In such cases there is assumed to have been some organic damage to the tissues below the point of injury or adjacent to it. *Traumatic delirium* may be a sequel to concussion. Actually the number of psychoses resulting from trauma to the head is small. Outstanding symptoms include a gradual change in disposition, irritability, vasomotor instability, and physical symptoms such as headache and nausea. Mental alertness is usually impaired and judgment is deficient. Often there are convulsive seizures. One variety of traumatic psychoses is known as *post-traumatic*

mental deterioration. Here there is evident a progressive deterioration in functioning and a gradual enfeeblement of abilities. It is difficult to distinguish this disorder from cerebral arteriosclerosis.

The functional psychoses include those serious mental disorders of presumed psychogenic origin wherein no clearly defined physical cause can be demonstrated. The three outstanding clinical types are: (1) the schizophrenic psychoses (dementia præcox), (2) the effective psychoses (mania-depression), and (3) paranoia.

The symptoms and causes of the schizophrenic psychoses. —It is convenient to divide schizophrenia into four main subtypes. These are: (1) simple schizophrenia, (2) hebephrenic schizophrenia, (3) catatonic schizophrenia, and (4) paranoid schizophrenia. There is an additional subtype, mixed schizophrenia, but this is a catch-all to which the other forms contribute.

The outstanding symptom of the schizophrenic psychosis is the marked change that takes place in the emotional life of the patient. He becomes apathetic and indifferent in his emotional responses to the world and even to those individuals with whom he has the closest ties. This flattening of affect and complete lack of emotional show extends to situations and individuals who are of greatest concern to him. Along with emotional blunting there is evidence of a tendency to withdraw from reality, and an inability to distinguish between waking life and an inner life of fiction and fantasy. This results in a loss of contact with the real world. Ideas of reference are also present, the patient believing that the activities of everyone with whom he comes into contact are directed against him. Interest in the self is lost, and the schizophrenic patient is likely to be slovenly in appearance and manner. The emotional blunting remains in sharp contrast to the intellectual life, betraying a lack of harmony between emotional and thought functioning. Ideas which should produce profound emotional alterations are expressed with indifference. Auditory hallucinations may be present, and there are frequently found delusional trends based upon ideas of influence, *e.g.,* the patient believing that his thinking is controlled by radio, etc. There is also evidence in

schizophrenia of mental deterioration. This is subject to measurement by tests which provide an index of the extent of the deterioration.

Simple schizophrenia is characterized chiefly by lack of interest and indifference leading to an apathetic state. Such patients remain withdrawn from activities, cannot concentrate upon any single task for an appreciable amount of time. Many of them never come to the attention of hospital authorities but exist in the population as drifters, floaters, and hoboes. They are asocial because of their seclusiveness; yet they tend to lead a very active life in daydreams and fantasies.

The variety known as *hebephrenic schizophrenia* is differentiated mainly by symptomatic silliness of behavior as well as incoherency of speech, action, and thought. The patient laughingly expresses bizarre and fantastic notions, rambles on inconsistently and without any apparent logical connection between one thought and the next. Hallucinations may be prominent, and there are usually superficial delusions which come and go without reason. The psychomotor rate is decidedly increased, and there is much posturing and gesturing. Emotional deterioration is more extreme than in simple schizophrenia.

There are two phases in *catatonic schizophrenia,* the stuporous phase and the excited phase. In the stuporous phase the patient becomes utterly withdrawn from reality, refuses food, is negativistic, will not utter a sound, remains in the same position for long periods. Some patients will allow nurses and attendants to do with them whatever they please and will offer no resistance. These are likely to show "waxy flexibility"; that is, they will permit themselves to be placed in awkward positions and maintain the pose indefinitely. Other patients will vigorously resist any attempts to change the attitudes and postures they have assumed. In certain respects this stuporous phase is artificial. The patient, apparently having taken no notice of surroundings, is often able to relate in concise and sometimes astonishing detail, the events which occurred around him while he was stuporous.

In the excited phase of catatonia patients indulge in fan-

tastic and seemingly senseless behavior. Motor activity is increased, sometimes to the point of rendering the patient dangerous. Stream of speech is wild and incoherent, consisting for the most part of repeated phrases delivered in a loud voice. There is also excessive activity of arms and legs in which the same patterns of movement are endlessly repeated.

Paranoid schizophrenia is often difficult to distinguish from true paranoia. In the schizophrenic variety, however, the delusions are not systematized nor are they fixed. In addition, they are accompanied by the lack of show in the emotional field symptomatic of the schizophrenic form. In paranoid schizophrenia, too, there seems to be a fixation of sexuality on a homosexual level.

Many theories have been advanced to account for the development of the schizophrenic psychoses. Heredity has been suggested, as well as causative endocrine and neurological pathology. The most widely accepted current theory holds that schizophrenia results from the failure of the individual to make a satisfactory adjustment to his environment because of the development of faulty habits. Rather than meeting and confronting his difficulties, the schizophrenic has turned inward to find satisfaction in daydreaming and an active fantasy life. Frequently he has regressed to behavior modes of childhood when faced with difficult situations. Eventually this evasive way of meeting life-situations becomes habitual and withdrawal is complete. A genetic theory of schizophrenia, based upon typical life-histories of such patients, holds that the schizoid pattern is visible early in life in seclusiveness, overactive fantasy life, and the formation of withdrawal patterns which appear whenever problems are encountered.

The symptoms and causes of the affective psychoses.—The psychoses which we call affective are characterized by disturbances in emotion, mood, and feeling-tone, and only secondarily involve other psychological functions. We shall consider the *manic-depressive psychoses* and *involutional melancholia.* Under mania-depression we find such states as: the manic, the depressed, and the cyclical. These designations refer to the predominance of one group of symptoms.

The manic-depressive psychoses are recognized by exaggerated emotional response. In the *manic states,* the patient betrays intense excitement through hyperactivity and flight of ideas. There is marked distractability and incoherence of speech due to the swift flow of ideas that all demand expression at the same time. All reactions are speeded up, and the general impression is one of intense excitement. Mania has progressive stages from rather mild excitement to intense, hyperacute manic periods where behavior becomes violent, often destructive and combative. In the latter stage hallucinations may appear and disorientation is evident.

In the *depressed states* the clinical picture is in direct contrast to that which we have described for the manic states. There is a general diminution of activity, psychological functioning is retarded, and the patient is in the throes of a generalized depression. In such conditions suicide must be guarded against. Symptomatic of depression is slow, deliberate movement and the expression of ideas of inadequacy, worthlessness, dejection. In the stage of acute melancholia the patient tends to be monosyllabic, does not engage in spontaneous activity, remains motionless and withdrawn. When he does speak, he expresses self-castigatory ideas. Patients often blame themselves for having committed the "unpardonable sin," and express hypochondriacal notions. Hallucinations and delusions abound, most of them having to do with disease and sin. In essence there is little impairment of intellect and insight is not lacking. Because of preoccupation with the self, orientation is likely to be inadequate. At the extreme end of the depressed scale lies the depressive stupor. Here nursing care is urgently required since patients are entirely withdrawn and completely unresponsive.

In the *cyclical* or *circular* type of manic-depression there are wide and apparently unaccountable swings of mood from one extreme to another. There is frequently a normal period between these pendulous extremes, and in this way the condition is differentiated from *mixed* manic-depression, where the swings do not pause at a point of normalcy. In the manic phases the patient is exalted and active, exhibitionistic and excited; in the depressive phase there are delu-

sions, psychomotor retardation, emotional depression and other signs and symptoms.

The causes for the manic-depressive psychoses have been sought in the influence of heredity and constitutional factors. Psychogenic factors include the inability of afflicted individuals to meet life-situations in an adjustive fashion based (as in schizophrenia) upon faulty habit-patterns laid down during the development of the individual. In the depressed states the feelings of guilt and inadequacy may be based upon real or imagined repressions; while mania may well be the patient's way of asserting and expressing drives which have been released after periods of great tension. The precipitation of mania-depression can sometimes be traced to a severe emotional experience, but the condition is said to occur in individuals who, before the onset of psychosis, demonstrated spontaneous mood changes. Just as in schizophrenia the prepsychotic personality is believed to have been introverted, so in mania-depression the prepsychotic personality is said to have been extraverted.

Involutional melancholia is a condition resembling the depressive states of manic-depressive psychoses. It appears during that crucial time of life when the entire organism undergoes certain rather profound changes; in women during and following the menopause, and in men as the senium approaches. Where such conditions are reacted to by a psychosis, there are feelings of unreality, self-castigation, and depreciation. Psychomotor rate is impaired in the direction of mild excitement and agitation, sometimes culminating in destructiveness. An over-all symptom is vague anxiety and apprehension. This may be accompanied by nihilistic and, very often, hypochondriacal delusions. Speech is usually repetitive. All of the foregoing symptoms are accompanied by a regression of behavior to an infantile level requiring continuous nursing care.

The symptoms and causes of paranoia.—The term paranoia should be restricted to that psychotic condition which is characterized by systematization of delusions. These delusions are supported by appropriate emotional attitudes and, since the patient is likely to take steps to support or follow out his contentions, such patients are likely to be

dangerous. Hallucinations may or may not be present. In cases where the delusional system deals with religious objects and symbols, there are apt to be visual hallucinations in the ecstatic periods. Although every variety of delusion is possible, the two most frequent are delusions of persecution and of grandeur. These are well developed and often tremendously involved. Since intelligence remains unimpaired, the systems are usually logical.

Paranoia seems to arise out of feelings of inadequacy and inferiority, inability to meet conflict in an adjustive manner, and guilt arising from repressed wishes and desires. The mechanism involved in the production of symptoms is compensatory. Convictions of inferiority are transformed into delusional grandeur, power, and greatness. Unbearable guilt is projected and the patient comes to believe others are persecuting him. Repressed homosexuality has also been mentioned as a causative factor. The prepsychotic personality is said to be suspicious, sensitive, and introverted, but this claim lacks adequate substantiation.

The diagnosis of psychoses.—Psychotic conditions are diagnosed by the same methods of complete examination of the individual and painstaking survey of the total personality that have been suggested in the previous section where the nature of mental illness was discussed. The examination is fourfold, including physical, nervous, emotional, and mental status. The various constellations of symptoms are factored out and a suitable classification is adopted. In the psychoses, however, it is frequently found advisable to make a preliminary diagnosis and then to allow varying lengths of time to elapse before a final diagnosis is decided upon. This is sometimes necessary because the clinician does not always meet his patients when their particular disorders are fully developed: they are sometimes encountered in transitional stages, sometimes in early or late stages. For this reason complete formulation of a case and final diagnosis must wait upon continuous observation over a period of time.

The final choice of the most suitable diagnosis depends upon symptoms displayed by the case in hand and the resemblance such symptoms bear to classical descriptions of the different varieties of psychoses. In the organic psychoses

medical examination and laboratory findings provide the most important guideposts to diagnostics. The examination of spinal fluid resulting in the disclosure of a typically paretic gold curve, together with other physical signs and symptoms of syphilis of the central nervous system, naturally points the diagnosis towards general paresis. Evidence of systemic disease, history of trauma to the head, the discovery of physical signs resulting from the use of drugs or exposure to poisons, all provide positive clews to classification. In the functional psychoses it will be noted that each type has a very definite theme. Schizophrenics demonstrate shallowness of affect, manic-depressives show mood-swings, paranoiacs present delusional systematization. The able diagnostician can recognize the appearance of such themes in the symptoms his patients present. These he utilizes along with the life-history and the findings from his inclusive examination in establishing a satisfactory diagnosis.

Differential diagnosis, *i.e.*, the procedure of differentiating the diagnosis achieved from other possible diagnoses, is necessary in the psychoses. This is because symptoms overlap and cases are rarely clear-cut. The paretic, for instance, may present delusions and a symptomatic picture of withdrawal from reality. Hence it becomes necessary to consider the possibility of a diagnosis of schizophrenia, or manic-depression, or paranoia. If the typical laboratory findings are lacking and neurological signs absent or diffuse, the clinician is forced to base his diagnosis on the behavior symptoms his patient demonstrates. To continue with our illustration, he will note that the withdrawal is not so complete as it would be in schizophrenia, that the delusions are typical of paresis, that his patient is further from reality than the manic-depressive.

Schizophrenia must be differentiated from feeble-mindedness; catatonic schizophrenia from the stuporous phase of manic-depression; simple schizophrenia from paresis and other neurosyphilitic disorders. The manic-depressive psychoses must be differentiated from schizophrenia and its sub-forms, as well as from paresis and, in the manic phases, from paranoid grandeur. Paranoia must be differentiated from the obsessive psychoneuroses and other forms of mental

disorder. Because faulty diagnosis may result in futile attempts at therapy, differential diagnosis is important in all varieties of mental disorder and especially in the psychoses or insanities as they are often called.

Treatment in the psychoses.—In the organic psychoses treatment is primarily medical and is directed toward the amelioration and cure of diseased organs, infectious conditions, or malfunctioning. The problem consists of the localization of pathology and its treatment by the best means available. Medical science has made great strides within recent years and has provided us with novel methods of treating many conditions that were formerly not amenable to therapy. One instance is the use of malaria and fever therapy in paresis. It is based on the discovery of Dr. Wagner von Jauregg that the organism involved cannot withstand high temperatures. He proposed the use of inoculation with tertian malaria organisms, and this is now the treatment of choice in general paresis. Apparatus for the production of high fever artificially is now widely employed. The treatment of schizophrenia by convulsive therapy, employing such substances as metrazol and insulin, has also proved to be of some value. Within recent years the development of electrical methods for the production of therapeutic convulsions has made this procedure more convenient. Shock therapy has proved of value in the manic-depressive psychoses as well. In addition, the synthetic production of hormones in chemical laboratories has provided useful tools for restoring endocrine balance in cases where the glandular apparatus is involved. Sedation, based upon increasing knowledge of physiological chemistry and physiology, has become a high art in the handling of disordered patients. Psychotherapy, including hydrotherapy, occupational therapy, and the suggestive techniques, has continued to provide admirable therapeutic tools. The tremendous advances of modern education has also had effect upon latter-day treatment of the psychoses. Finally, psychoanalysis and some of the variant techniques stemming from this root, give promise of providing not only insight into the nature of mental disorder, but means whereby an approach to therapy may be accomplished.

Nursing care in the psychoses.*—Nursing care in the psychoses can be administered adequately only where the nurse has gained sufficient knowledge of, and insight into, the various types of disorder. This can be attained after study and intelligent application. Unlike nursing requirements in other kinds of illness, nursing in the psychoses requires ingenuity and a large amount of initiative. The nurse must be a good observer, able to chart in sequence the behavior of the patient. She should be prepared to recognize alarming symptoms and signs as they appear, and to provide the necessary precautionary measures suitable in each case. The greatest single attribute the nurse can demonstrate is the ability to carry on with equanimity at all times.

Special therapeutic situations make certain demands upon the nurse. The care in malaria therapy, for instance, cannot be overstressed. This applies as well for the varieties of shock and convulsive therapies. Not only must the routine be mastered, but an intimate knowledge of the various possible types of reaction and the best manner of dealing with them should they happen must be a part of the nurses equipment.

While it is inadvisable for the nurse to take an active rôle in treatment, she must realize that she is an essential part of the therapeutic environment and behave accordingly. Her conversation with the patient must be carefully controlled. Discussion of symptoms and the treatment program should be avoided. Care must be exercised to reduce the possibility of retarding progress through personal carelessness or obtrusiveness. Very often the nursing of certain patients may be not only thankless but embarrassing. For this the nurse must be prepared. Suicide is always a possibility with psychotic patients, and the nurse must constantly be on the alert for situations productive of such behavior. Beyond the familiarity which the nurse must have with the administration of general nursing care for the comfort of the patient, the nursing of the psychotic calls for special attributes of knowledge, personality, and character.

* Students interested in psychiatric nursing should read Harriet Bailey, *Nursing Mental Diseases,* (4th Ed.). New York: The Macmillan Co., 1939, or some similar book.

QUESTIONS AND EXERCISES

1. What is the difference between mental illness and bodily illness? Select one condition in each group and describe fully with special reference to overlapping factors.
2. Try to visit an institution for the feedle-minded during your next holiday and see if you can describe in detail its treatment program.
3. Have you ever experienced a psychoneurotic episode? If so, see if you can describe its course, the symptoms you experienced, and your general attitude during the attack.
4. Do you or any of your friends have a phobia? Give a full description of its content, paying especial attention to the devices employed in avoiding situations applying to the phobia.
5. Distinguish between "precipitating" and "predisposing" factors in the production of mental disorder.
6. By the method of free association, see if you can recall one important and crucial memory in your life during the course of one hour's worth of associating aloud.
7. Distinguish among the functional psychoses. What is the central theme of each? How can you recognize the various disorders?
8. Assume that you are a clinician and your roommate or friend is a patient. How would you conduct an examination to determine mental disorder? What questions would you want answered?
9. List the important elements of special nursing care in feeble-mindedness, psychoneuroses, and psychoses.
10. Devise a method for ascertaining whether or not a patient is really blind or hysterically blind.
11. Devise a method for desensitizing a psychoneurotic of his fear of crowds.
12. List as many of your own faulty habits of response to upsetting and emotional crises in your life as you can. Describe one situation where your response was faulty and see if you can construct a more adequate scheme of response should the same situation arise again.

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CHAPTER XIII

PERSONALITY AND ITS DEVELOPMENT

Nature of Personality

Is personality a "certain something" that one either has or lacks? Is it an indefinable quality that an individual possesses if the gods were gracious in their bestowal of gifts? Is it a term solely descriptive of one's social graces, mannerisms or appearance? None of these more popular conceptions of personality serves as an adequate description or explanation. Personality denotes the total living, developing, dynamic, adjusting organism in its total environment. It is equivalent to the total individual in all of his aspects. It is the integrated whole of his physical, mental, emotional, social, moral, intellectual, æsthetic, and religious characters. His physique, hopes, ambitions, purposes, knowledge, habits, attitudes, ideals, intelligence, emotions, standards of value are all a part of the functioning whole. All of these aspects and qualities characterize the individual and determine his effect on others. They make up his social stimulus value. Personality has unity. The normal individual has many parts to play in his daily life. He assumes one rôle while in school, or at work, another at home, and still another in social life. The normal personality can participate in all activities but maintain its unity and continuity throughout. This unity of behavior is based upon the fact that the human organism is itself a unit. All physical, mental and emotional responses are interrelated and the individual faces life situations as a total personality.

We cannot think of personality as fixed and static. It is always changing as new environmental forces are brought to bear upon inherent potentialities. What it is at the present is not dissociated from what it has been or will be. Although personality is undergoing change, an individual does

not become an entirely new person in a moment or a year but his behavior today has developed from that of the past; and the past and present provide the basis for the emergent personality of tomorrow. Thus, we conclude that personality has continuity.

There is an integration of personality but the degree varies from one individual to another and in the same individual from time to time. A particular person tends to react in a given manner under certain conditions. This habitual reaction tendency gives consistency to his behavior. It is upon this basis that one earns the reputation of being happy, grouchy, timid, pleasant, loquacious, or taciturn. But since environmental factors are always changing we cannot predict personality reactions with complete accuracy. No one may be expected to display perfect consistency of traits at all times and under all conditions. Some individuals are lacking in integration of personality or stability to the extent that their behavior is unpredictable, irresponsible, impulsive. Such people are undependable and unable to make effective adjustments. Inconsistent behavior is frequently seen in illness. One who may ordinarily accept situations calmly and graciously may be angered by a trivial cause if he is suffering from a headache or fatigue. In fact the first sign or symptom of an illness may be a change of mood, a depression of spirit, possibly accompanied by anxiety or irritability. Diseases of cardiovascular or pulmonary origin may give rise to a transitory confusion and alterations of moods. Disease conditions accompanied by toxæmia and febrile states often produce imaginary sounds and images. The patient may not see clearly or hear accurately, may know neither the place nor time and become unpredictable to the point that he may do serious harm to himself or others. With restoration of health comes normal behavior. Variable degrees of personality disintegration may be observed in individuals suffering from mental affections.

The opposites of inconsistent personalities are those who have become so habituated in their responses because of attitudes and experiences that their actions and words are almost predictable. While consistency is desirable, this extreme predictability can lead to maladjustment in that the

individual may develop resistance to changes, and new influences. The happy medium is that type of behavior that conforms flexibly to new and changing conditions.

The integrated wholesome personality adjusts itself satisfactorily to life and its demands. But failure to adjust or conform may produce a disordered or maladjusted personality which may be confused, evasive, secretive, fearful, suspicious, emotionally disturbed, and impaired in judgment.

Factors in Personality Development

Nursing involves much more than practical applications of skills and learning. These are very important, to be sure, but probably no more important than wholesome attitudes, kindliness of spirit, sympathetic understanding, gracious manners, friendliness. Every sick person and every anxious relative look for those qualities which they believe exist in nurses. You may ask why nurses are expected to exemplify the finest of human qualities. Probably because sickness or approaching death erase from the mind many superficialities, exposing those higher attributes fundamental in all human beings. He who is brought face to face with serious thoughts of the future and reflections upon his past feels the need of someone who can understand what he is experiencing and whose attitudes and manner complement his emotional needs. It is at such times that a patient feels strengthened by the clergy. It is for such times that a nurse should develop to the fullest her fine personality traits.

Some of those important factors which, through their reciprocal action and interrelation, affect the development of the personality, will be discussed in this section.

Health and physical condition.—The broader concept of health includes physical, mental, and emotional soundness. These elements are all interrelated in affecting the personality efficiency. Sound physical health promotes wholesome emotional responses. The feeling of well-being, optimism, self-confidence attending a body free from pain or fatigue lends an exuberance of spirit, a freshness to the appearance which is not ignored in either social or professional contacts. Good physical health frees the mind and body for

other interests and activities, whereas poor health absorbs most of one's thoughts, limits his activities and capabilities.

Nurses may be called upon, at times, to undergo physical, mental, and emotional strain which, if prolonged and intensified, leads to fatigue with its attending host of symptoms. Occasionally, certain health hazards are encountered. In order to meet the daily requirements of her work and to withstand any unusual demands of energy, the nurse needs an abundance of health and energy for her own welfare and for the well-being of her patients. An ill individual is stimulated by the manifestations of good health in those about him. A patient can be adversely affected by nurses obviously suffering from such ailments as a cold, headache, or fatigue.

For the nurse of normal health, a regimen including sufficient sleep, recreation, a reasonable diet, sunshine, and exercise out-of-doors, should maintain the normal requirements. But each individual needs to realize her own physical capacity and limitations. It is the unwise person who attempts to adapt another's health regimen to her own particular needs.

The budgeting of energy is probably one of the most important health factors that individuals need to learn. When the output of energy becomes greater than the stored supply, fatigue results. Tired people are apt to be unhappy, apprehensive, depressed, hesitant. They often fail because of poor judgment and inability to concentrate. The rested person is more likely to be ready and able to face any situation, and consequently is happy, courageous, confident.

To continue working with a partially rested nervous system and muscles is inviting trouble. In most instances, a tired body will be able to do only a fraction of its normal amount of work. If it is not given sufficient time to recuperate, its efficiency will be further depleted. A week's vacation will do more good when the first symptoms of general fatigue occur than a month's rest sometime later. Some individuals would benefit by two vacations of shorter duration each year than one long vacation. The importance of daily restoration cannot be ignored. While eight hours of sleep is considered sufficient for the average person, it is

inadequate for many. Going to bed early even one night a week may help give the additional rest which some individuals require.

Appearance.—Every business or professional woman knows that her appearance can be an asset or liability to herself and to the establishment for which she works. We turn to admire a woman who is well groomed, appropriately and harmoniously dressed. Looking well and knowing it gives added poise, charm, confidence, and satisfaction. Satisfaction with the appearance releases the individual from thought of herself and affords the opportunity of showing consideration and interest towards others. If we are conscious of a run in a stocking, a dress that fits badly, a hat that is unbecoming, a costume containing an array of colors without harmony, poorly groomed hair, we are so concerned with ourselves and with the dread of these imperfections being discovered by others that any vestige of charm which we may possess is lost.

Women who dress well have learned to do so. They dress according to their own individuality, through selection of styles best suited to their particular distinctiveness and the use of measures to enhance good features or to conceal poor ones. They know the colors that are most suitable to the color of their skin, hair, and eyes. The same color that is becoming to one person can make another look drab, conspicuous, or uninteresting. An attractive piece of wearing apparel can lose its æsthetic value if its color or type does not combine with other parts of the costume. A sports outfit should be entirely sport and all articles of an afternoon ensemble should depict uniformity of type. An effective costume requires harmony throughout and no detail should be allowed to spoil its total perfection.

The same careful grooming for social occasions should carry over into working hours. The condition of shoes, hose, uniform and cap usually indicate the type of nurse their wearer is. In the words of Elsie Lincoln Benedict: "Your personal appearance, your dress, your manner, your grooming, your haircut and hair dress are the front windows which advertise as all show windows do, the stock of goods inside." Nervous tension tends to produce excessive per-

spiration and unless habitual measures are taken to combat this condition, an otherwise fresh, pleasing appearance may be disillusioning. Patients and their relatives like to see a nurse attractive, neat, and clean. They would like to feel that she is an ideal and that her simple, neat, clean-cut appearance is symbolic of that ideal.

Our first impression of people arises from their appearance. First impressions are important because they are often lasting and it is only after we actually know a person in many situations that we arrive at a true evaluation. If nurses developed the habit of erect posture and proper carriage, displayed at all times a kind, refined and courteous manner; were smartly and appropriately dressed, well groomed, made discreet use of cosmetics to enhance attractiveness, the public would receive better first impressions of many members of the profession.

Education and experience.—Having a high school, nursing, or college diploma does not necessarily mean that one is educated for an accumulation of learned facts is not a guarantee of real education. Far more important than mere fact learning is the development of wholesome attitudes and interests and correct habits of thinking. The adage "as a man thinketh, so is he," is not without foundation. People can learn from both school and life experiences to keep the mind receptive to new facts, new ideas, new friends. An educated person, regardless of whether he has had the benefits of a formal education, adopts the scientific method of thinking. He observes that many questions can be viewed from more than one angle. He reserves judgment until all evidence is collected and reviewed. Such thinking does not allow prejudices to color individual attitudes, nor actions and thoughts to be ruled by emotion. Great and respected individuals are not afraid to change their opinions, even though their personal pride may suffer humiliation.

Acquisition of certain information and skills enables people to solve their own problems. But just as important as pertinent information, is each individual's experience as he meets and solves daily problem situations. The experience of an individual, however, is not in itself so important. What really counts is how he utilizes that experience. The

intelligent person, in remembering the past, uses that gained experience in anticipating the future consequences which will evolve from present actions. In this way, he avails himself of methods which will enable him to adjust more successfully to changing demands of the environment. He learns to profit by mistakes and successes. Each experience, be it pleasant or unfortunate, if properly used, can become valuable in guiding future action. A nurse rarely encounters two situations identical in nature; therefore, the experience gained in one instance can be of greatest help in dealing with subsequent circumstances.

A nurse should strive to learn through her observations and experiences to place greatest emphasis on those things which will yield permanent values, satisfaction, rewards. Gaining a perspective on relative merits is helpful in the selection of alternate choices of action. Ask yourself which things will be more important a month or ten years from now. Reporting off duty on the stroke of the hour in order to keep a social appointment may seem necessary at the moment but its importance will dwindle in comparison with a patient's disappointment because you, in your haste, neglected to relieve him from an almost unbearable strained position.

Volition and purpose.—Volition and purpose are dynamic factors in personality development. Volition or will is the sum of the conditions of choice plus action. Purpose is a mind set to a goal. The person of a strong will allows no obstacles to sidetrack him from his purpose. The weak-willed needs prodding and encouragement to keep at the job. Ideas, desires, and hopes may elicit muscular responses which will accomplish those goals or aims. Idle wishing differs from volition at this point in that a wish is not necessarily followed by appropriate motor response for effective results.

While each nurse must learn to obey orders she will have many opportunities to develop the ability to act intelligently in new and changing situations. She must learn when to accept good suggestions and when to reject questionable ones. Expecting obedience upon command does not allow a child or student to develop the ability to make choices. Com-

mands are sometimes necessary in emergencies but in average situations an explanation of desired action is a more efficient method of developing proper response. Habitual commands are likely to produce obstinancy.

We know what disastrous results can follow an impulsive action. But prolonged deliberation may be detrimental in that it tends to foster indecision. Most situations that confront the nurse do not permit delayed reaction; instead she must learn to size up the situation as quickly as possible and act accordingly.

Developing or training the will depends upon the development of the ability to make wise choices and appropriate actions. Forming new habits and breaking old ones is a matter of giving immediate motor response to the decision made. A student nurse who determines to do her best will not likely repeat an error. In fact, errors will be few because she will have a steadfast desire to succeed; therefore, she will develop the habit of penetrating situations and acting according to her best judgment. As someone has said: "In all behavior he who takes responsibility takes chances. Do the thing that in your best judgment is the thing to do under the existing circumstances, do it as well as you can, watch what happens and learn your lesson from it, and if you have character you will not go far wrong."

Conscience.—One's conscience, or standard of values which influence modes of conduct, is built on habits and attitudes developed through early experience and social and religious conditioning. It thus becomes evident that the "faculty" of conscience will vary in accordance with differences among individuals. This developed code of conduct gives to the individual the conscious recognition of right and wrong as regards his motives, actions, and attitudes. However variable it may be among people and groups of people, individual conformity with this accepted code becomes imperative. Conflicts of mind arise when impulses are at variance with the conscience. When those impulses are followed, a sense of guilt and its attending discomforts follow.

Conscience is considered a most important quality in nurses because of their great moral obligation to others. Differences among nurses is often accounted for by the

variable degrees of this standard. A highly conscientious nurse is one who has acquired mature habits of a high purpose, accompanied by a strong resolve to meet fully her responsibilities. She does what she realizes should be done, be it pleasant or unpleasant, all the while aiming at successful accomplishment. The motives of a less conscientious nurse may operate on a lower level in certain respects. Unless she is imbued with her obligation toward the welfare of patients, she may not attempt to give them her maximum efforts. She may not be sufficiently self-disciplined to use accuracy always in measuring medicines, or in maintaining aseptic technique. When she is being observed, she may perform her duties in an approved manner. She is motivated by fear of criticism rather than by the desire to be efficient.

Work habits.—The attitude toward one's work is an important factor in the development of personality. Each individual should feel that his chosen work is worth while. For successful performance, each worth while task should be accompanied by a plan of action. Then the activity becomes purposeful. If the undertaking is carried out successfully, an undeniable satisfaction results. Integration of the complete personality may be observed in the individual who can give full concentration to the work in hand. Observe anyone who is deeply absorbed in the task that to him is fascinating. Such a worker has no conflicts that cause restlessness and undue fatigue, for the whole personality is working in harmony toward the attainment of the goal. But in contrast, notice how an individual works who must necessarily complete a piece of work which holds no particular interest for him. If he has not acquired mental discipline, lapses of attention become more frequent, he experiences fatigue, moves about frequently, and labors in a haphazard fashion.

Best work habits are based on an actual love of one's work, and a willingness to do more than the alloted share, to work longer than the specified hours when occasions demand, to do the extra bit or "go the second mile." People who are disinterested in their job usually watch the clock during working hours. For them the hour to report for duty comes too soon and the hour for reporting off duty comes too late.

The slightest distraction sets the mind wandering on new tangents and much energy is utilized in constantly bringing attention back to the immediate task.

Work becomes a significant part of life because of unconscious attitudes that develop in connection with it. We see illustrations of this in the overburdened housewife who becomes incapacitated due to illness. She longs to return to the tasks about which she had previously complained. One who loses his job feels bewildered, helpless. Work furnishes not only financial independence, but personal freedom and self-respect.

There is always a certain amount of routine and monotony in everyone's occupation, a fact which most people overlook. We often look at other people and imagine how interesting their lives must be. Actresses and ballet dancers spend hours in rehearsal and repeat actual performances hundreds of times. Famous athletes must constantly refrain from indulgences and spend endless hours in practice to keep physically fit. A large part of the day of office executives is given over to routine, uninteresting details. Nursing is probably less monotonous than most work. While certain routines are necessary day after day, intervening situations provide a variety of activities. New acquaintances are being made, and new problems ever arising which give added interest and challenge to each day's work.

Emotional reactions and their control.—The urge for emotional expression is universal but it is important from the standpoint of a wholesome personality that emotions be expressed in a normal manner. Unrestrained emotional reactions or their continuous repression are injurious to both mental and physical health. People suffering from high blood pressure or certain forms of heart disease may suffer deleterious effects from sudden outbursts of anger. Many personality maladjustments arise from constant repression of such feelings as fear, anger, love, hate. In the normal individual the emotions can be directed and controlled. Usually the only problem involved in the redirecting of unrestrained emotion is that of freeing oneself from the early childhood reactions of jealousy, rage, and envy. Many individuals of mature age are still childish in their

reactions. They resort to pounding on desks, kicking the nearest object, slamming doors, pouting.

Young children are likely to act in accordance with their emotions because they have not yet learned to submerge their feelings in matters requiring intelligent action. They will be found doing an interesting task with enthusiasm and zest. But they are equally adept in finding numerous excuses to prolong the accomplishment of uninteresting work. They often refuse to recognize good qualities in one whom they dislike, therefore exclude that person from participation in their activities. Their dislikes are often based on small personal matters such as "queer clothes," or the attitude of the parents.

Unfortunately, many people have not replaced these childish habits with intelligent action. There is no place in nursing for young women whose behavior is still on the infantile level. They must learn to do all things well and not confine their efforts to those of a pleasant nature, leaving the unpleasant for another. Direct response cannot always be given to things or people that bestir emotions. Rewards cannot always be expected as the result of successful achievement. Because the charge nurse makes no comment concerning the efficient work done by a student nurse is no reason for the student to feel that worthy efforts are never appreciated. An emotionally mature nurse does not require the unusual or spectacular to spur her energies. Many adults who are restless, bored, or dissatisfied unless they are experiencing new thrills and new adventures are still children emotionally for they have not learned to derive satisfactions and happiness from the commonplace things of life.

Undue restraint or repression of emotions gives rise to unwholesome behavior responses. These repressed emotions can often be given normal expression by the substitution of new interests. Continuous use is made of this principle in hospitals and sick rooms. A convalescent patient may become disgruntled, bored, unhappy, or faultfinding because of his restriction from normal activity. But a marked change will be noted in his response if he is provided with a new interest that absorbs his attention.

A normal expression to emotions may be given in one's

daily work, recreation, social activities, or in active or spectator sports. The individual who engages in a wholesome variety of activities is not likely to suffer from restrained emotional responses. The nurse finds many occasions when her feelings must be held in check. She may become irritated to a point almost beyond endurance, still she is expected to maintain a calm decorum. And often when confronted with the unhappiness of others, it would be a relief if she, too, could give vent to her feelings. But those pent-up emotions can be released after working hours if she throws herself wholeheartedly into some form of enjoyable activity. Allowing thoughts of unfortunate and disagreeable situations to occupy the mind can only produce unwholesome effects.

Sense of humor.—A sense of humor is the ability to perceive the amusing or ludicrous side of a situation; it also denotes the ability to laugh at oneself. It is a great asset to a nurse for with a sense of humor she can, with propriety, add a touch of spice to a disturbing situation which will help to relieve the tension for all concerned. Without this quality, one is likely to take life and its problems too seriously; in fact, it is lacking if all situations assume serious proportions. Most events which provoke anger are significant enough at the moment but their importance tends to dwindle with the passing of time. The person who can discern the absurdities of conduct in himself as well as in others is better equipped to size up situations and attach relative importance to each in its turn.

Self-confidence.—Self-confidence is developed by the actual performance of work and by meeting with success. And success is dependent to a great extent upon confidence. Self-assurance gives poise. People who possess poise have a complacent spirit which gives stability and fortitude in the face of any unrelenting force. Poise is one's best friend in social contacts and one of the greatest of assets in professional work. It liberates one from thoughts of self and provides the strength to seize fleeting opportunities for both speech and action which may never recur. Young children possess this quality but as the human being grows up many things can happen to it. Fear and a sense of failure are great

destroyers. Self-conscious individuals suffer from a lack of confidence. Their muscles are tense, their movements are uncoördinated or purposeless and they are continually reminding themselves of their deficiencies.

Each individual must take himself for granted. No one is perfect. The law of averages indicates that one individual may excel in some qualities or performances part of the time but he must expect to be exceeded in certain other respects. Such an attitude aids in maintaining a normal balance between inferiority and superiority. Mistakes are made by everyone but they should not be permitted to shake one's self-confidence. Some people suffer keenly from their erroneous acts or judgment. Bitter criticism heaped upon the victim at this point may completely destroy his morale. What he really needs is encouragement to aid in reconditioning himself. Feigning self-confidence, however, in some unfamiliar situation is a grave error which nurses cannot afford to commit. Remember that the most respected, trusted and renowned individuals have never hesitated to say "I do not know."

Student nurses have a splendid opportunity to develop self-confidence. They can be sure, first of all, that their appearance and their attitude is wholly desirable. They can assimilate new and pertinent information when the learning opportunities are available. In fact, the importance of a complete understanding of one's task as a means of developing self-confidence cannot be overemphasized. The confident and successful speaker in public would not face his audience without a full comprehension of his subject.

Self-confidence can be developed further by making one's responses correspond habitually to the kind of person one wants to be. Developing the same manner of speech and attitude in doing an ordinary nursing task as one would assume at a formal party, giving the same courteous treatment and consideration to a maid as to one's professional superiors, not manifesting company manners or speech but having a natural demeanor at all times, tends to develop habits of proper decorum appropriate for any occasion. Then one need not be on guard continuously lest the wrong thing be said or done.

Dependability.—Of all personality traits essential to nurses, dependability probably ranks as one of the most important. Dependability as an inclusive term incorporates other qualities such as punctuality, sincerity, and honesty. These traits are desirable not only for nurses; they serve as valuable qualifications for one who practices any profession, follows any trade, or who is engaged in any line of business. And they are prized as highly in social life as in work activities.

In the highest sense, this trait implies reliability of the individual in all that he says, does, and thinks. The thoroughly reliable nurse can be depended upon for conscientious performance of work; she can be depended upon to be accurate in making statements or observations. She is dependable in the prompt fulfillment of patient's requests, carrying out orders, reporting for duty. It is important for student nurses to remember that the reputation of being dependable is gained not only from effectual fulfillment of great responsibilities but also from those things which may appear at the moment to be less important duties. The person who is reliable in responsible positions is usually one who was found to be reliable in doing the most ordinary work. It is at times when a nurse must assume responsibility alone, that she has greatest need for being dependable. Unless others can rely upon her total efficiency, she will not likely be given responsible duties nor allowed to hold important positions.

Each nurse bears a responsibility not only to herself but to her work, her institution or organization and to her profession. Groups function more efficiently when they can rely upon each individual member to carry out her specific, assigned duties. The greater the trustworthiness of each member, the smoother becomes the running order of the organization. Errors and negligence of one person can cause numerous people to become involved in making necessary amends. Disastrous results can follow errors of omission or commission at the bedside. And unhappiness and concern of many can arise through a lack of courtesy or tact shown to a patient or a visitor. Thus, dependability is an essential trait in both the student and the professional nurse.

Leadership.—There are degrees of leadership, ranging from one who assumes responsibility for a large organization to one who guides or directs a few individuals. A nurse is a leader in that she is constantly teaching, probably not in the classroom, but always by example.

The qualities of a leader are of great importance, for they color the attitudes and responses of those who follow. There is a type of leader who demands immediate action, who governs the actions of others by her own personality, or by inspiring fear of criticism or punishment. Such leaders produce a chaotic state, general dissatisfaction and unhappiness with an attending loss of respect and confidence of the followers. Another type sizes up the situation, reflects upon the most effective and easiest methods that can be used, and proceeds with work in an orderly systematic fashion.

The best leaders are not always those who do the most work. Sometimes they do less, for they recognize that others have initiative and abilities which should be developed and allowed to function. An effective leader must understand human nature, and the social, economic and industrial forces in operation. Moreover, she must be an expert in her own field. Without such equipment, neither her followers nor her critics can respect her leadership.

Every nurse needs managerial ability, for wherever she works, whether she is a student or graduate, she will find people who need her assurance or leadership. The nurse, therefore, who knows what she is to do, who plans her work in an orderly fashion and proceeds quietly, who recognizes the relative importance of details, who gives consideration to suggestions of coworkers, the patient or his family, not only maintains a serenity of disposition but gives assurance. Also, the guidance by such a leader is most likely to produce effective results, the good will, happiness and satisfaction of all those for whom and with whom she works.

Friendliness, tact, courtesy.—Unless the nurse can meet all groups of people with ease and confidence, show equal consideration to all, advise without offending, or give complete self-expression to her ideals through words and actions, she loses many splendid opportunities to give the best of what she is, and what she has learned and experienced. "It

is undoubtedly true that when two applicants are in the same field for the same position, everything else being equal in the way of skill, knowledge, and efficiency, the one possessing charm and social grace is invariably given preference." [1]

We live in a world of human beings, therefore it becomes our obligation to learn how to live with them in a harmonious and tolerant fashion. Courtesy is polite behavior toward others; by extending courtesy we signify our consciousness of their presence. Greater concern for others than for self makes life easier and happier for all.

Good manners, like all habits, become a part of one's life when practiced consistently. They are meant not solely for state occasions but for use in daily living in the home, on the street, in the sickroom, at school. They express our sincere wish to make others comfortable and happy. The nurse who makes courtesy a habit and who has learned the art of gracious living need have no fears upon entering the most formal home.

The courteous nurse addresses patients, physicians and coworkers by their names and does not attempt familiarity. She does not hesitate to say "please" and "thank you." When working in institutions she treats patients and visitors as she would a guest in her own home. Each nurse, through her courteous manner, can extend the graciousness of her hospital to the public.

Someone has defined tact as cultured common sense. Tact is the fine discernment as to what is fitting in dealing with others so as to win good will or avoid giving offense. This trait is necessary in any successful social or professional contact; it takes off the sharp corners and makes for smoothness and congeniality. The tactful nurse has a perception and appreciation of the feelings of others and therefore is quick to say and do the proper thing. She avoids words and actions that may offend a patient or coworker. She is skillful and clever in handling situations so that the least disturbance is created and the maximum satisfaction is granted to all concerned. Her criticisms are of a constructive rather

[1] Theodosia Crosse, "The Nurse as a Social Personality," *The Pacific Coast Journal of Nursing*, XXXIII (Feb., 1937), No. 2, 86.

than of a destructive and blunt nature. When in the presence of a patient she does not permit her concern with untoward changes to register in her facial expression. She answers his questions concerning his own condition in such manner that he does not become worried or alarmed; in fact she is able to avoid those tensions which might otherwise be aroused through thoughtless remarks and attitudes. Impulsive words and actions are frequently tactless. Many tactless remarks are made because regard for another is made subordinate to oneself. Tact usually abounds in those who are kind and who experience the feeling of good will toward their fellow men. The critical, pessimistic, selfish individual is less interested in others, therefore little time is spent in giving them the consideration necessary for congeniality.

Friendliness is a desirable quality in anyone. It becomes not only an important but a necessary quality in nurses if they expect to be successful. To be friendly implies a kind-hearted feeling toward others. It includes the desire to please, cheer, or make others happy. It means liking people for their good qualities and in spite of their bad ones. Friendliness is a habit which can be developed. Its development is facilitated by the realization that each person is neither entirely good nor entirely bad. This attitude fosters tolerance and kindness, two of the most worth while qualities that a nurse can possess. Our own degree of amiability can be self-determined by noting what association is brought to mind when certain individuals are mentioned. If we recall immediately an unpleasant memory or quality, we can be sure we are critical and unfriendly. Kind people are more likely to render credit than discredit. They make allowances for the weaknesses and faults of human nature and are charitable in their considerations. Dislike for others comes from within ourselves rather than from them. Usually any disapproval of another produces a critical attitude which shows in one's facial expression and behavior. Such attitudes put the other person on the defensive and make compatible associations difficult to maintain.

Being friendly with patients and coworkers does not mean being confidential in what pertains to our inmost thoughts, hopes, ideas. People with poise do not reveal themselves to

everyone with whom they come in contact. We feel disappointed and soon lose interest in individuals who lack this reserve. It is often what people do not say about themselves that makes them fascinating and makes us seek their companionship more frequently.

Many people working under great pressure develop habits of hiding behind attitudes of indifference and hardness. This becomes a lamentable situation when a nurse allows herself to fall into such habits because a hard brusque manner destroys charm, and overshadows the most desirable personality traits. These attitudes are often developed by those who seek self-protection. The attempt is made to surround themselves with an impregnable shell which they hope will serve as a rebuff to unpleasant situations or additional work. It is indeed an unfortunate circumstance when nurses cannot take the time to be kind, sympathetic, courteous, to listen to another's problem. True, a few people will take advantage of an understanding person but the great majority of people who seek the advice of a professional nurse feel the need of something which she is in a position to give. Imagine a patient's bafflement and disappointment if that person who is competent to help turns a deaf ear or intimates that she is much too busy to be bothered with trifles What appears to be a trifle to one may be a major problem to another.

Voice.—A pleasing voice, as part of the nurse's personality, cannot be overestimated in importance. A stranger judges others by their appearance and what they say and do. He has learned from experience that certain types of people speak in a certain manner. The quality and tone of voice reflect the emotions. Warm, friendly qualities of voice are the result of kindness, generosity, and love of fellow men. A hard, brittle, cold tone may be the result of selfishness, dissatisfaction, and intolerance. Affected speech is displeasing because it indicates that person is attempting to be something she is not.

A low, clear, well-modulated tone is always desirable. A loud, harsh, whining, rasping, high-pitched voice is unpleasant to anyone but sick people find it intolerable. Laughter, too, should be soft, never loud nor of an explosive nature.

Through voice intonation, a nurse can bring comfort and a sense of security to a restless, apprehensive patient; she can quiet and subdue one who is noisy and unruly, or introduce an optimistic and cheerful outlook to the discouraged or unhappy individual.

Since the voice is such an important part of personality each nurse would do well to attempt to improve this quality. Training in voice culture from an instructor will help immeasurably in developing control, pitch, effective enunciation and correct pronunciation. Each can learn much about her voice by listening to it and attempting to correct faults or improve desired qualities.

Conversation.—The art of conversation is an extremely important element in the sickroom. Many a nurse has been considered thoroughly competent until her lack of conversational ability became apparent. Self-centeredness and too great absorption in one's work to the exclusion of other interests and activities will render anyone dull and uninteresting. A good conversationalist needs a store of knowledge and experience upon which to draw. This knowledge may be gained from reading a daily newspaper, news magazines, current periodicals, and good books.

One of the fundamental principles of the art of conversation is knowing when to talk and when to keep silent. Each nurse must learn that for herself, for experience teaches that there are degrees of illness when conversation with the patient or with others in his hearing is exhausting. During convalescence the patient usually enjoys conversation but no one, sick or well, likes to be subjected to continuous talking.

Conversation is a give and take of ideas and no courteous person attempts to hold the floor. In the sickroom a patient's tensions can often be relaxed if the nurse permits him to carry most of the conversation. A reticent individual may be reluctant to talk. A good conversationalist will determine the other's interest and take up conversation at that point. That interest need not be ascertained necessarily by direct questioning of the patient in a classroom fashion but by noting certain remarks made by the patient and his visitors. The type of work he does may give a cue to his interests, or his place of birth may lead into a discussion of

foreign lands or far away sections of our own country. Topics are always wisely chosen if they are of interest to the patient rather than to the nurse.

Conversation dealing with generalities is more acceptable than that touching on personal matters. A nurse should never be led into discussing her personal affairs or problems with a patient. Those things that pertain to her personal life should not be confused with her professional activities. Probably one of the greatest offenses is the discussion of previous patients. Any personal affairs of a patient of which the nurse may have knowledge should be held in strictest confidence. No heated discussion or argument should ever be allowed to develop in a sickroom or within the hearing of a patient. A few patients may attempt vulgarity but the nurse can hold herself above any coarseness and at the same time avoid offending by tactfully steering the conversation to a more acceptable level of good breeding.

Basic personality needs.—Motivation of most behavior is produced by certain tensions and strains which keep the organism in a state of unrest until the means for relief of the tensions are satisfactorily provided. Physiological drives which include hunger, thirst, elimination, temperature maintenance, sex, rest, and sleep are common not only to man but to lower forms of life. They are instinctive, since they do not need to be learned in the usual sense of the term. How the sick and well are affected by these drives and how the thwarting of these needs can affect behavior are discussed elsewhere.

Other personality needs which are common to man include the social drives. Some of these are social approval, mastery, and security. Everyone desires to be recognized and approved, and the efforts to attain these ends may take various forms in wholesome or unwholesome enterprises. If the nurse is to be poised and complacent she needs to find means for fulfilling these desires. She needs to meet with success in her work. Being able to excel in some form of activity whether it pertains to work or to a game of bridge supplies the needed recognition. She needs the sociability of friends but should not become dependent upon them. Contacts with one's family, church, cultural and social in-

stitutions, reading, recreation, exercise out-of-doors—all stimulate wholesome living. Many of the nurses who become maladjusted and unhappy are those who have not found the means of satisfying these social drives, who engage in too little or no social activity, who participate in no sports activities, who have no hobbies. Since the factors pertaining to the physiological and mental health are interrelated, none can be overlooked if the behavior of the nurse is to exemplify a wholesome, integrated personality.

Improving the personality.—This is not always an easy task since the personality has been in process of development from birth. It cannot be remade in a day or a year. However, it can be changed for the better if the individual is willing to persevere.

The problem consists in breaking certain patterns of habit and establishing new ones, in submerging undesirable behavior and allowing finer qualities to express themselves. Before this can be accomplished the individual must take honest stock of himself by determining which behavior patterns should be eliminated. In other words, he requires an awareness of his undesirable habits and he requires a sincere desire to replace those traits with more favorable ones. Development of new interests is valuable when any attempt at personality improvement is undertaken for these new interests tend to bring out talents hitherto unrecognized. Personalities can be remade more effectively when the individual is subjected to an entirely different environment where he must develop new ways of reacting to people in new situations. During the process of readjustment to the new environment, the old patterns tend to deteriorate through disuse.

The following items might profitably be used as a means of checking personality values. If you can answer these questions in the affirmative you are a well-adjusted nurse. On the other hand, these listed qualities may indicate wherein improvements of personality need to be made.

1. Do you get along with 90% of the people, not because of the fact that you are a "yes" person but because you have personality?

2. Do you listen attentively and sympathetically?

3. Do you command respect and confidence to the extent that people talk freely to you?

4. Do you deal with people individually, recognizing the idiosyncrasies of man?

5. Do you radiate happiness, know how to smile, have a sense of humor, have a cheerful outlook on things in general?

6. Do you attain objectives through leadership, patient explanation and understanding?

7. Do you have a sense of values, can you pick the wheat from the chaff, eliminate gossip and act on the important things?

8. Are you democratic, human and friendly, treat all with the same consideration? Do you remember names?

9. Do you avoid discussing your own problems while on the job?

10. Do you give people a good first impression of the organization or institution for which you work?

11. Are you tactful and diplomatic? Can you make constructive suggestions without losing friendship and respect?

12. Do you enjoy your work? Do you find real satisfaction in your job? [2]

Personality Qualities in Efficient and Inefficient Nurses

The majority of nurses who fall short of professional success do not do so primarily because of any lack of knowledge and skills but because of personality inadequacies. The qualities requisite for success can be contrasted in the personalities of desirable and undesirable nurses. In attempting to depict the personality of the best and the worst nurse let us draw upon two imaginary situations in which the dominating traits of each can be set forth.

Miss B. is a young woman of high intelligence. She was able to make high marks in high school without much effort and she is now puzzled by poor ratings in nursing. She has never developed the habit of hard work; while others are studying or preparing for an examination she spends her time listening to the radio or attending the movies, believing that she already knows enough "to get by." She could be

[2] Lloyd R. Sherrill, "Getting Along With People," *Public Health Nursing*, XXX (June, 1938), No. 6, 388.

an attractive girl but she feels it not worth while to spend much time on appearance while she is working. She wants friends but finds herself isolated from the most desirable students in the school. She participates in few group activities. Her leisure is spent in idle gossip or daydreaming of the things she would like to accomplish.

Her patients dislike her, but due to her extreme selfishness she is never conscious of this fact. Because they need to remind her continually of things that are important to them, she complains that they are fussy and spoiled. She shows definite favoritism in that most of her time and attention is given to those whom she likes; to others she manifests impatience, antipathy, indifference. When patients inquire as to the reason for certain treatments she makes no effort at a satisfactory explanation but gives such indefinite answers as "it will help you to get well."

She is often a few minutes late for work but manages to be off duty on the stroke of the hour, regardless of what remains to be done. She refuses to work irregular hours, even in an emergency, if such interferes with a previously arranged social engagement. She never hesitates to ask for favors although she grants them reluctantly. When another requests assistance she replies "that's not my job." In fact she is disliked by her coworkers because she attempts to make her way by bluffing but in reality she does less than anyone else and creates unpleasant situations which others must rectify.

Rather than ask for advice when uncertain of techniques she proceeds in blind attempts. Her excuses to the criticisms following her poorly done work imply that she was adhering to methods previously taught her elsewhere. She openly resents criticism but never hesitates to remind others of their shortcomings. Very often she blames other factors such as physical illness as being the cause of her failure.

Her lack of security and self-confidence which is manifested in an indifferent attitude, prevents her showing due consideration and respect for others superior in accomplishments, and since she shows no respect to others, she receives little in return, all of which produces constant friction and conflicts. This student will undoubtedly find herself grad-

ually becoming more unhappy and maladjusted than she is at the moment. She is her own greatest enemy since she resists all things that could aid in her learning and adaptability. Her knowledge of nursing is inadequate; she has not learned to live or work with others; she is obviously disinterested in her work. Her one ambition after she graduates is to get a job where she can tell others what to do. If she continues in these old habits she can do no more than bring unhappiness and dissatisfaction to those for whom and with whom she works. There is no place in the profession for this kind of nurse.

Miss A. has the reputation of being the best student in the senior class. Although cognizant of her potentialities she is also aware of certain shortcomings towards which she directs corrective efforts. She is a very happy person because she is succeeding in being a good nurse, her chief ambition since childhood.

Her friends are many and she is always receiving invitations to join parties, to participate in group activities. Two outstanding qualities are her versatility and adaptability. She does most things well because she puts forth sufficient effort to make herself proficient. Although not an accomplished musician she plays the piano very well, is a good ice skater and makes a desirable bridge partner. The fact that she has a good sense of humor, is optimistic, enthusiastic and can readily adapt herself to any group or situation increases her popularity in social activities and among her professional colleagues.

Patients like her because she has a poised, serene, quiet, sympathetic manner worthy of their confidence. She always remembers to do the little things that make them happy and contented. She remembers that Mr. Thomas does not like the covers drawn tightly over his feet, that Mrs. O'Hara likes a cup of tea in the evening, that Mrs. Smith desires ice left out of drinking water. Dr. Jones prefers that she assist him in his work because he can depend on her to supply him with the proper size gloves, good needles, and complete equipment.

One middle-aged patient became quite despondent over the necessity for her prolonged convalescence. Through

casual conversation Miss A. learned that this woman had always had a desire to do clay modeling. Upon being supplied with the necessary materials this patient in the weeks to come passed many enjoyable hours with her new interest. Prior to the discharge of a cardiac patient from the hospital, this student inquired into his responsibilities and living conditions at home, finding that he lived in a third floor walk-up apartment and that he assumed unnecessary responsibilities because his family had no realization of his need for more rest. These facts were reported and immediate measures were taken to create a situation in the home which would prove more adequate for the well-being of the patient.

Miss A. does not resent criticism because she knows she is in a learning situation and that her superiors with their greater experience can give her immeasurable aid. She has learned that the immediate reporting of her own errors to the right source is a means of protecting the patient's welfare. Habitually she offers assistance to other nurses; through observation it has become evident to her that at times certain activities become everyone's job. She is ordinarily an even-tempered person but there are times when she, too, becomes exasperated. Instead of allowing herself to become too disturbed she delves wholeheartedly into the necessary work and in a short time all details of the unpleasant situation are forgotten.

Miss A. will soon graduate and there are many positions that will be available to her; she has shown herself capable of growth and to be the possessor of a gracious manner which will guarantee her success in any field she elects.

A Hygienic Regimen for Nurses

Additive to the factors of personality development are other elements which contribute to the establishment of wholesome attitudes of the nurse toward herself and her work, which will provide her with a more adequate manner of living.

Learning to get along with others.—In all contacts there is bound to be a certain amount of superficial friction at times. It occurs among the closest of friends, in the family,

at work, in school. Trivial annoyances are more likely to turn into frictions during periods of fatigue and stress. These inevitable discords are unimportant and should be overlooked, but serious conflicts are important for they may develop into major personality problems. Harboring grudges is a bad habit in which a wholesome personality cannot afford to indulge. It is much better to face an issue with the individual, talk the situation over objectively, then forget the incident that produced the conflict and begin on a new basis. A wholesome personality does not tolerate an accumulation of destructive thoughts to consume the time and energy which can be more profitably given over to constructive thinking.

A fundamental fact for nurses to remember is that they, like everyone else, cannot hope to please everyone all the time. Try as hard as they may there is always someone who will find fault. They are constantly before the public eye and they carry great responsibilities, both of which factors will always provoke comments. Much criticism is unjustified. Many criticize because they do not understand the motives of others. People of different temperament often fail to arrive at a common understanding. Others, because of jealousy or envy, refuse to give due recognition for worthy efforts. None of these situations should provoke undue concern or worry. They can only be considered as part and parcel of life's total experience.

Some criticism, however, has grounds for justification. Everyone has shortcomings of which he may or may not be conscious. Inasmuch as each person has a fundamental desire to be liked, it is well, therefore, to face one's faults and cease finding excuses for them. But unfortunately this is not always an easy task for many old habits of resisting criticism may need to be replaced with those of a more wholesome nature. These undesirable habits of response are familiar to all. Some listen attentively to criticism and then proceed in their accustomed channels, ignoring the entire incident. Others lose their temper and accuse the critic of having the wrong point of view. Some whimper and complain that no one ever appreciates their efforts. A few people lack confidence in themselves to the extent that they

attempt to carry out all suggestions, good or bad, without using their own judgment. Such attitudes bar the way for improvement.

How then is the nurse to receive this inevitable criticism when it does come? One way to get along with others is to show as great a willingness to receive suggestions as to give them. The individual to whom nothing can be told invariably arouses animosity. If criticism is listened to in an objective manner with an open mind much can be learned. One need not assume the "what's-the-use" attitude because another can view and judge objectively. Few people criticize for the sake of creating unhappiness. The source from which suggestions come is important. Obviously, the criticisms offered by a misinformed or envious critic are best ignored. But the competent, experienced person who can offer suggestions for the sake of improvement should be heeded. The wise person gives due regard to such admonitions, for she will thereby be profiting from the other's experience.

Developing an objective attitude.—Most physicians and nurses have an objective attitude because their work is concerned with others. It is a wholly desirable attitude as it eliminates emotionally governed behavior. For the sake of clarity we might say an objective attitude implies that a patient is viewed as a problem to be solved, not as an obstinate, revengeful, individual who tries to make trouble for the nurse. It is free from bias and personal feelings. An individual may look subjectively upon his own possessions, troubles, and affairs but objectively upon those of other people. An objective attitude is seen in nurses who give all thought to a patient without concern for themselves. There are innumerable examples of heroic deeds where men and women have stuck to their post of duty even though their own lives were imperiled. When grief and trouble come, we go to another for help and advice because he can look objectively at the situation, whereas the person involved can only view it emotionally. One with an objective attitude is not disturbed by slights or criticism because of the realization that normal people do not wound intentionally. An objective view towards one's work, and his own habits would

enable him to judge himself and his performance as effectively as could an onlooker.

Meeting with success.—A great part of life's happiness comes from doing the work that one prefers and doing it well. Successful achievement brings a satisfaction and contentment at the end of a busy day. Successes, however, need not be great and outstanding to be worth while. Overcoming an obstacle, no matter how small, is success but the more difficult the problem the greater is its achievement. Providing a new interest for a despondent, discouraged individual, making a lonely child happy with a favorite toy, persuading a patient to take a medication which he had persistently refused, overcoming a fear, are all successes. Success is measured by desirable character qualities and doing well whatever one's alloted job may be; it is not determined by the size of one's salary, attainment of a coveted position or fame. In short, success is measured by what you are, rather than by what you have. The majority of people do ordinary work and receive ordinary remunerations. Certainly we could not say that the only people who have attained happiness and success are those few who have risen to great heights.

Every nurse can assure herself of greater success if she develops the habit of perfecting all details of her work. Remember that big successes rise from small ones and that a job well learned is first learned from the bottom. Probably one of the greatest essentials for success is developing the capacity for sustained professional growth. Growth in all its aspects, physical, mental, emotional, social, intellectual, spiritual, and professional is necessary for happiness and success. The job of any nurse changes, brings new demands, and unless she is willing to keep alive her capacity to grow with her job and its ever increasing opportunities she will be left in the background. Growth stops when one shuts her eyes to new opportunities, fails to accept new ideas, and becomes satisfied to remain in the same old familiar groove.

Establishing for oneself a challenging goal is an incentive for continued endeavor. The successful person is able to supply her own stimulus. She is not dependent upon constant encouragement or praise, for she has learned to work

steadily and equally well, with or without commendations. The one without a goal requires prodding, and constant encouragement and then often places the blame for her failure on another's doorstep. One's own pride is a great stimulant for its spurs the ambitions and the will to succeed. Those goals can be reached, not without effort, but with steady, disciplined working habits, not from external pressure but from self-administered and self-sustained pressure.

Freedom from worry and the feeling of insecurity.—Stability is essential for happiness and success. A student can still do a day's work enthusiastically if she knows her superiors admire, believe in her and recognize her good qualities even though she has made mistakes. Security comes in part from self-confidence. Lack of self-confidence produces such symptoms as fear, worry, anxiety, irritability, depression. Even physical symptoms and illness may result. Individuals aware of their insecurity may make great effort to overcome it and develop other signs or symptoms such as overconscientiousness and aggression. The insecure individual has not made the necessary and appropriate adjustments for the satisfaction of her well-being.

Exhaustion is the penalty paid for inward strain and worry. It is not the responsibilities but the inner anxieties that wear people out. Hard work does not necessarily produce undue fatigue. But dissatisfaction, critical attitudes, fear of criticism, or inability to accomplish the task, dislike for the work, produce a disintegration of physical and mental forces that brings on strain. We often see people carrying tremendous responsibilities with no evidences of fatigue. Their great strength comes from working without strain. Those doing less work are often more exhausted because they worry, have conflicts, or unsolved problems, or poor self-discipline.

Poor organization of work causes strain and worry. When many responsibilities and duties arise at once, concentration on one thing at a time, promptly moving to the next, will soon complete all work. Accumulated unfinished work is invariably disconcerting. The habit of putting off disagreeable tasks can consume a great amount of mental energy. If work is done promptly, the task can be forgotten.

Trivial irritations and annoyances often receive far more attention than their worth admits. Many nurses repeat at length their painful and unpleasant experiences, whereas the more sensible attitude is to forget the whole affair. Most small things, with sufficient concentration, can be magnified to tremendous proportions. Even physical ills can be increased by repetitious thought. A patient may lead himself to believe that a vague pain or discomfort must surely be the symptom of some complication. Too much attention should not be given to minor physical ailments, weariness, discouragement. Nor should undue attention be given to those things over which we have no power of control. An intervening situation which could not be averted or situations for which we cannot assume responsibility should not be allowed to consume too much thought on what-might-have-been.

Recreation and leisure time activities.—The most interesting people are those who find that many things interest them. No one who is interested in a variety of things can remain unhappy for long. Hard work needs to be offset daily by diversion or recreation and periodically by vacations. Too much work and no play fatigues mind and body, inhibits the development of wholesome emotional responses, dulls social responsiveness, makes each day a humdrum routine. The value of recreation lies in the variety of interests that it can produce, the opportunity offered for self-expression, relaxation, entertainment and social contacts. If one's job does not offer the desired opportunities, outside interests can supplement these felt needs. To be most worth while in the maintenance of mental health, these interests should be pleasurable and of a contrasting nature to one's daily work activities.

Nothing widens horizons, adds more interest, or probably gives more pleasure than travel. A vacation spent in an entirely new environment, among different people is a miraculous tonic for those whose work holds responsibilities and routines. People often make the mistake of carrying their work even on a vacation. To get the most from a holiday, forget what you do, where you work, allow no other to recall to your mind your work experiences. In other words,

leave the job behind you. It will still be there waiting for your return.

The greatest use is probably made of leisure when recreational needs are combined with cultural development. Plays, good literature, fine music offer diversion and at the same time stimulate thought and imagination and provide for wholesome emotional responses. Mediocre movies, sentimental stories, cheap novels, and popular music have little cultural value and are a waste of time if they are allowed to consume all of one's leisure. When weariness and fatigue take hold, anything more than light and amusing entertainment is too much. Rest at this point becomes more essential to physical and mental health than recreation. Everyone should know when to rest and when to relax. We must remember that all energy comes from one source and overindulgence in physical exercise when mental fatigue is present, will use up the complete supply. Many take their free day and holiday too seriously and return to work more fatigued than before.

Religion or philosophy.—Because of the many experiences to which nurses are subjected, each needs some stabilizing force to help maintain faith in herself and in humanity. She needs strength not only for herself but for those dependent upon her. When a patient's own endurance and courage fail he has desperate need of another's unwavering strength. It is impossible to give to others what we do not ourselves possess. Serenity of mind and spirit come from religious faith. A nurse cannot possess a completely integrated personality if she attends to only her mental and physical development, for spiritual development is a link binding all parts of her being into more perfect unity. The nurse who develops such qualities as kindliness, tolerance, sympathy, and understanding will never be indifferent to the suffering and needs of others.

There are many spiritual influences that can inspire the dominance of finer traits; these vary with different people. Some derive great satisfaction and stimulation from music, friendships, the beauty of nature, or of artistic creations. Religion, however, in its various manifestations appeals to practically everyone. A great humility of spirit arises from

the recognition of a controlling creative intelligence or power.

QUESTIONS AND EXERCISES

1. If loud talking in a nearby room were disturbing your attempt at sleep, what would be the most satisfactory method of solving this problem: report the incident to the residence supervisor, endure the noise and forfeit your sleep, or go to the student and ask her coöperation that you might secure your much needed rest? Why do you think your solution to the problem would be the most sensible one?
2. What do those nurses lack who insist upon talking about their professional experiences, and displaying their knowledge when associating with nonprofessional people? What impressions are thereby created by this obviously poor taste in social conduct?
3. What undesirable habits and attitudes can develop from habitual "shop talk"? Why does the devotion of one's working and leisure hours to the same thoughts produce a dull, uninteresting individual?
4. What does the attitude of "getting by" imply? Can a nurse with this objective be really interested in her work? Can she expect to be successful and happy in nursing? Why or why not?
5. What psychological fact underlies the advisability of allowing young children to make choices appropriate to their level of mental development? What effect does this have upon their judgment when maturity is reached?
6. Enumerate the reasons why happy, wholesome childhood experiences are likely to produce a well-adjusted adult.
7. Try this experiment on yourself when you are in the company of your friends, walking on the street or shopping. Deliberately refrain from smiling; assume a critical, unfriendly, and defensive manner. Watch the facial expressions and reactions of those with whom you come in contact while you assume this attitude. The next day, make yourself as wholesomely attractive as possible; smile, not artificially, but genuinely; radiate happiness, friendliness, good will toward others. Did people look at you and treat you differently than they did yesterday? Why does one's attitude toward others always act as a boomerang?
8. Recall from your experience those times when your actions were prompted by your emotions. Reflect upon what you

would have done had you acted according to reason? How many people about you manifest emotional immaturity? How many of those characteristics would you like to possess?

9. List those things which in any given day have called for dependability on your part. What may have happened in those instances had you not been faithful in fulfilling the expectations of your capabilities?
10. Why is this an opportune time for the reshaping of your personality into what you most desire it to be?
11. What is personality?

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CHAPTER XIV

MENTAL HYGIENE

Definition

Mental hygiene is the applied scientific principle and art which deals with the development and preservation of the wholesome personality by the processes of prevention and therapy. It consists of a growing body of information, principles, and techniques. These materials can be used (1) in the prevention of all kinds of personal and social maladjustments and certain kinds of physical disorders, and (2) in the treatment, reëducation, and reconditioning of individuals having nervous and mental difficulties of a minor nature. Normally, the emphasis is on prevention. Psychiatry deals primarily with the more serious personality disorders and their treatment. Mental hygiene is something that is practiced by everyone who possesses a well-adjusted, integrated personality. The practice of mental hygiene enables us to meet the problems of life both successfully and happily. It stands us in good stead in both sickness and health. It provides us with appropriate attitudes and habits for making wholesome adjustments to all manner of situations. It gives a stability and perspective for meeting the most difficult problems and emergencies.

Sources of Data

Mental hygiene draws relevant data from many sciences. These include biology, physiology, neurology, pathology, psychology, psychiatry, sociology, pediatrics, endocrinology, and other sciences. Whatever facts have a bearing on the preservation of mental health, directly or indirectly, become useful tools. The situations, procedures, and techniques which are used in reëducating, reconditioning, and treating

personality and conduct disorders and mental illnesses also become a part of any course in the field of mental hygiene.

Anyone who is properly fortified with the necessary knowledge and techniques can be a mental hygienist. In a very practical sense, each trained nurse is a mental hygienist. Ideal parents, teachers, physicians, and clergymen are among other efficient practitioners in this field. Every act, thought, and feeling expressed in their dealings with others tend to promote mental health. The inefficient and failures in these professions are usually weak in these respects.

The Need for Mental Hygiene

The number of people in the United States who are in public and private institutions for the treatment of nervous and mental diseases exceeds the number who enter college the same year as freshmen. In this country, there were 499,879 patients in hospitals for mental disease on January 1, 1938. It is estimated that about 4.5 per cent of the population will experience at some time a nervous breakdown or serious emotional upset. The number of patients admitted or readmitted in any one year is about 110,000. The average length of hospitalization is three years and the yearly economic cost more than $750,000,000 of which amount $200,000,000 is spent from public funds.

On July 1, 1940, there were 71,210 mental patients in New York State hospitals and another 7,604 in family care and on parole. If we add to these, the patients in the state schools for the mental defectives and epileptics, the grand total becomes 98,873 for New York State alone. The story is much the same for the other states and for many foreign countries.

The number requiring institutional care becomes doubled if we include the wards of juvenile courts, and all inmates of detention homes, reform schools, jails and prisons. But these figures do not tell the whole story. A much larger group lives on the borderline. They are socially maladjusted, emotionally disturbed or suffer from varying degrees of personality disorders and poor mental health, but not badly enough for institutionalization. To all these may be

added a still larger number who are beset by worries and fears, who are unhappy and unsuccessful, frustrated and hopeless. And the great majority of all these cases could have been prevented if the proper measures had been taken in time or the causative factors and conditions prevented from operating. "Those in other fields of health are doing splendid work in lengthening the span of life. But what will those added years mean—happiness or unhappiness? Are additional years of living a prize to be sought if they are to be years of disgruntlement or despair? So, while other forces of public health are working to increase the quantity of life, it is the task of mental hygiene to improve the quality of life." [1]

As we have read previously, the wholesome, healthy personality is dependent upon suitable factors and conditions for its development. But when those elements are lacking, or the inherent impulses of human beings are thwarted, maladjustments are likely to arise. There are many origins for these inhibited impulses and activities. Socio-economic conditions resulting from unemployment, war, poverty, other unfortunate circumstances can and do produce many maladjustments of the personality and much mental illness. Diseases, disfiguring physical defects, poisons, toxins, shocks, and drugs contribute their quota to the total number. The traits of a single individual may be in conflicting operation. A student, for example, may wish to attain successful records but because of inertia may find herself falling far below her desired standards. Certain social codes, religions, beliefs, attitudes, prejudices, may prevent an individual from pursuing his normal and inherent desires. Poor psychological environments may be as devastating as any other cause if they result in frustrations, feelings of failure and insecurity, or despair.

Attitudes and mental habits developed in childhood carry over into adult life, determining the adult adjustment. As seen previously, personality traits begin to form at a very early age and tend to become more permanent as age advances. Environmental factors play the largest rôle in these

[1] Stanley P. Davies, *Education of the Public in Mental Hygiene* (The National Committee for Mental Hygiene, Inc., 1932), p. 21.

habit formations. Parents, teachers, relatives and other associates form attitudes and behavior patterns in the young. The child has little to do with the formation of his own personality, for he is unaware of the proper or damaging effects being exerted upon him. Many are never aided in the early stages of learning to make satisfactory adjustments to thwarted plans and desires. But as they reach adulthood and develop adult emotional habits, and intelligence, keener judgment and insight, each can assume a part in correcting any faulty or undesirable habit patterns which may have been formed in early years.

Varieties of Adjustment

Man must continuously adjust to his environment. A single individual may manifest several types of adjustment from time to time and various adjustments are made by different individuals. In some techniques, the individual does something about the conflict situation; he may face reality by attacking his problems directly. But there may be an avoidance of, or withdrawal from, or even a denial of its existence. This individual retreats from reality by seeking some escape from facing his problems. Or, he may effect some form of compromise, a substitute response, a rationalization in order to preserve his ego feelings, which will serve as a protection from disagreeable ideas and memories.

Personality maladjustment, emotional disturbances, and mental illnesses include the entire range of disorders from minor maladjustments in the normal to the severe behavior upsets in the insane. As the neurotic and psychotic have been discussed elsewhere, we shall discuss here the more common maladjustment mechanisms found in many normal individuals but which appear in an exaggerated form in the seriously disturbed.

If the individual has a defect, real or imagined, he may resort to behavior that will *compensate* for the defect. If there is a physical defect he may strive hard to excel in his studies so that he may win some form of recognition. Or if he makes poor grades, he may strive for recognition on the athletic field, or dexterity in the manual arts. Many in

attempting to compensate for defects, over- or under-compensate, both of which are harmful by producing distorted personalities.

If the individual fails in his professional calling, he may attempt to blame it on "the times," his illness, or the community. In a real sense, he tries to avoid the blame by *rationalization* or self-justification. Everyone wants to think well of himself; therefore, he finds excuses to explain his shortcomings. This is a fault common to many people for everyday we encounter such remarks as "I didn't know I was supposed to do that," "no one told me," "it doesn't pay to work hard in this job." Or unpleasant tasks may be postponed because "there wasn't time to do it."

Some people will attribute to others their own baser qualities, desires, or moral defects as a defense against self-acknowledgment or as a means of lessening their own sense of guilt. This is *projection*. Thus a person who is untruthful may accuse another of telling falsehoods. Or, one who is criticized for poor work may retaliate by finding many faults in his critic. Often, those who are most critical are projecting their own shortcomings to another.

Some revert to behavior that is more fitting for early childhood stages of development. Adults may exhibit temper tantrums like children of two or three, some may speak and act in a childlike manner. This tendency to maintain the ego by living in the past is called *regression*.

Daydreaming satisfies the ego by providing pleasant fantasies as a substitute for failures or lack of attention in everyday living. It is an attempt to escape reality by seeking security and greater power in imaginative situations. This type of maladjustment goes hand in hand with seclusiveness. Daydreams are not harmful if they lead to plans for further action but the retreat into fanciful imaginings in which the defeated victim becomes the hero, or the martyr, becomes devastating to a wholesome adjustment.

Negativism consists in being stubborn, contrary, noncoöperative. The ego is maintained by resisting the appeals and influences of others since these might degrade the ego. Rather than admit even to himself that others may be superior in some respects, the individual remains aloof, refus-

ing to participate or acquiesce. This person may disagree to even such trivial matters as the state of weather.

Anxiety is a state resulting from inability to make decisions which must be made for effective living. As a result, a constant tension is set up. The individual fears to make a decision lest it be wrong, thus reflecting upon his judgment. These individuals usually lean upon others in decisive matters.

Aggressive behavior is an attempt to overcome a difficulty or to compensate for it and thus maintain the ego. Some who feel inferior become demanding, constantly insisting upon maintenance of their "rights," and often make themselves conspicuous, all because they desire to assert their importance.

Withdrawal behavior consists in shyness, lack of initiative, fears, unsociability, fear of meeting strangers, daydreaming, and retreat from the main currents of life. This type of behavior may aid the individual in avoiding conflict or failure. By attempting to remain obscure, the individual hopes to protect the integrity of the ego.

Apathy is usually the result of continual thwarting of simple desires. It is one of the most significant preclinical symptoms of psychoneuroses or antisocial acts. Successful activity of some sort and friendliness are the best antidotes for this condition.

Nervous behavior is an expression of inner tensions, stresses, conflicts. It is an indication of lack of security or stability in environment.

Some individuals make an adjustment by developing a disability. *Hysteria* patients develop various escapes from unpleasant situations by manifesting symptoms of physical or mental character for which there is no organic basis. The patient may develop the symptoms and signs of functional blindness, deafness, paralysis, appendicitis, or other ailment. The victim suffers keenly although he may not realize the cause. The disability saves him from an intolerable situation, or secures for him sympathy and attention that he gets only when ill.

Note: Students are urged to consult Dictionaries of Psychology and Medicine for definitions of the above types of adjustment.

Special Problems Pertaining to the Nurse and Her Work

The success of nurses depends on a number of factors but one of the most important of these is the personality factor. In this section we shall treat of some of the negative personality reactions that are likely to be deterrents and what to do about them.

Nostalgia.—Nostalgia, or homesickness, is frequently observed in the early days of the first year of training. Thoughts about home, and emotional depression may result in a loss of appetite or digestive disturbances. This condition may be cured by becoming absorbed in the work and forming the habit of meeting all new experiences with anticipation. Occasional trips home may give some relief but the cure consists primarily in hard work and in developing new friends, new activities, and new interests.

Self-consciousness.—Some individuals are sensitive to what others think of them and as a result they develop feelings of inferiority or complexes built up around self-feelings. This unpleasant pattern of behavior may become less distressing if the victim will only realize that others may feel much the same way. And it may be overcome entirely if those tasks which lead to recognition, approval, and success are attempted and performed. One needs to begin with easy tasks and progress to the more difficult. Success in small things lead to self-confidence in greater performances. For example, practically everyone experiences difficulty in self-expression when first attempting to give an oral report before a class, but, with frequent practice, self-consciousness gradually disappears. The cure lies in much practice in actual doing rather than thinking, in keeping the mind on the goal and not on oneself.

Worry.—Worry has its basis in fears. The patient worries about a treatment because he fears it, and often magnifies the situation out of proportion to its significance. He thinks about crossing bridges before he reaches them. Many students worry about being able to stay in school, passing the examinations, obtaining good efficiency ratings, getting a position, or holding it. Other worries may result from certain personality inadequacies or defects. One person might

be concerned about his health. He may fear to have an examination lest the findings would confirm his fears and make him more depressed. Worry is an escape technique. If the victim would only face reality, attack the problem vigorously and intelligently, and not magnify his own importance beyond all reason, he would cease worrying. He should realize that he may have developed the habit of worrying, or that his worries may be due to some conflict or indecision. The situation needs to be faced objectively and realistically. Then try to understand the cause. Discuss the problem with others. Consult medical advice if there is an indication of physical disability. Many worries will dwindle into their proper importance if one will act as if he had no worries, and develop a real interest in his work and opportunities that lie before him.

Feelings of inferiority.—Many individuals experience a sense of inadequacy. They feel keenly that they fall short of their contemporaries and these impressions and feelings are highly unpleasant, depressing, crushing. Such feelings may originate in many ways. They may be due to recognition of some real organic or physical defect which makes the individual very different from others, thus causing embarrassment. A hunchback, clubfoot, birthmark, homely features or body proportions are common examples. Or the inferiority feelings may arise from real or imagined defects in intelligence, character, physical vitality, social graces. They may be precipitated by real or imagined lack of opportunities or disadvantages due to social, economic, family, race, or other conditions. An extremely sensitive individual or child may develop an inferiority complex from a careless remark made by members of his family or companions.

Certain experiences such as failing in one's academic work or occupation or suffering from unfavorable comparisons may induce humiliation, disappointment, and feelings of unworthiness. Any radical deviation in dress, manners, customs and the like are also likely to result in such attitudes.

The symptoms and signs of an inferiority complex are many, varied, and often the opposite of what a casual observer anticipates. Self-consciousness, timidity, daydreaming, irritability, self-criticism and humility, lack of being at

ease, and introvert tendencies may be noted. But on the other hand there are reactions that seem to be compensatory. There may be extreme reactions, such as extreme aggressiveness, unusual enviousness, bullying tendencies, on the one hand and perfectionistic behavior, on the other hand. There may also be present a sour grapes attitude and complaints about the lack of opportunities to prove one's real worth.

How to overcome feelings of inferiority.—From the above discussion it is obvious that feelings of inferiority are mental sets rooted in culture conflicts. The individual finds himself in a new situation where the customs, habits, beliefs, manners, are different from those he originally developed. These attitudes of inferiority can be alleviated or conquered by any victim if he will attack his problem energetically. He should obtain an understanding of how the feeling gradually developed and what caused it. A frank appraisal of his own abilities and environmental opportunities and a firm conviction that the *summum bonum* for any individual consists in the best possible use of his capacities, talents, and opportunities will facilitate a sensible adjustment to the situation. He should realize that nearly everyone around him has had similar experiences and that he is not unlike them in this respect. In fact, some individuals seem to accomplish more because they have certain defects. In order to make their mark they must work harder or compensate for their disabilities or handicaps. In the active and successful pursuit of a goal, weaknesses are minimized or forgotten. By realizing that these mental sets are built up gradually by the process of habit formation, it is apparent that they can be destroyed by the same process by doing things successfully, developing habits of objective observation and social interests. And, finally, the practice of the art of relaxation and the cultivation of an abiding religious faith enhance the feelings and conviction of personal worth and human equality.

Fears and phobias.—The nurse may find in maladjusted patients numerous manifestations of excessive joy, indifference, or depression, or an alternation between emotional extremes. There may be an apathy, excessive anger, or a per-

sistence of anger. There may be normal manifestations of love or its perversions. Perhaps fear is the most consuming of all of these emotions. Not infrequently the fear response is an abnormal and uncontrollable reaction to some specific situation or object. It is then called a *phobia.* Thus, we have numerous phobias or fears: of high or open or closed places; of men or women; of thunder or lightning or darkness; of blushing, or blood or contamination or disease or sinning; of animals or crowds or death or solitude.

The treatment consists in finding the cause and reintegrating the phobia or emotional complex with the rest of the personality and by direct conditioning of the patient.

Prevention and Therapy of Maladjustment

Nearly all cases of personality maladjustment can be prevented or their severity and duration greatly lessened. Volumes have been written on this subject. Briefly, the program calls for a home, school, and occupation that are conducive to good health, feelings of security, success, happiness, and a wholesome attitude toward life. The program must provide for the proper balance of work, play, rest, relaxation, recreation, and hobbies. It implies (1) the existence of opportunities for the development of friendships, (2) contact with individuals who respect the individuality of others, and (3) medical, hospital, and clinic facilities.

In both prevention and treatment of maladjustments pertinent information about the patient's medical, home, and school history may be helpful. Various tests may be administered. Interviews with the patient, visits to his home, and conferences with his family or companions will all supplement the medical examination and aid in making a diagnosis.

The treatment may consist in the administration of drugs, the use of various therapeutic measures such as hydrotherapy, electrotherapy, endocrine, or vitamin therapy. Each of these has psychological effects. In deciding on the proper treatment, the physician must keep in mind why the patient came to him, his total background as well as the symptoms and signs. Capsules, tablets, and pleasant-tasting mixtures

of the right size, color, and dosage are designed to aid in effecting the desired response. In addition to the prescription of drugs and other methods for the relief of symptoms, the physician may use suggestion, and allow the patient to talk about his symptoms and his problems, thus allowing for reconditioning and reëducating of the patient in due time.

Suggestion denotes the process of communicating an idea or attitude from one individual to another, when the idea or attitude is accepted more or less uncritically. The term suggestibility refers to a state of mental readiness or set which is necessary in order that the suggestion may produce the response desired. Hypnotism is a stock example of this working principle. Suggestibility manifests itself particularly in connection with the great drives and urges such as "instinct," feelings and emotions, and deeply established habits. It is the stimulus which evokes the response.

Suggestibility varies according to race, health, age, general emotionality and temperament, sex, and education. It is increased by fatigue, hypnosis and prestige. As a rule, the ignorant and nonreflective individual is more susceptible to suggestion than a mentally alert, well-educated person who is given to reflection. Children are more suggestible than adults; and women more than men.

This method is valuable in medicine when properly used. Many mental cures are due to its influence. Suggestion implies that the patient has a mental set or attitude which makes implicit his belief in, or his acceptance of, a command or statement. It implies that the individual is ready to accept without reflection the statement or belief of another. Even an object such as a crucifix or altar may occasionally set off the response desired in the patient. *The mind can cure what the mind has caused.* Many functional disturbances may have been started by some moody experience when the individual was fatigued, discouraged, or grief stricken. Such mental dispositions once started often persist and become emphasized out of proportion to the rest of the consciousness.

In a larger number of cases a knowledge of the facts and laws involved in a given illness is sufficient to keep the individual in balance. While helpful in functional disorders,

suggestion provides no cure for definitely organic ailments. However, a favorable mental attitude is always an asset.

Thus, in many of the so-called functional disturbances, the psychotherapeutic methods are very valuable. Patients complaining about disorders that are found to be imaginary are not summarily dismissed. They are regarded as ill patients and as such they are reassured on the possibility of recovery. It may take many such reassurances in addition to medication for the relief of symptoms to effect a cure. Sometimes, the technique consists in getting the patient to remind himself that he is improving progressively. Autosuggestion is effective if the patient has complete faith in the method. Other forms of direct suggestion are effective to the extent that they provide a dominant emotional need and do not run counter to established facts.

Suggestion may be of an indirect nature. The treatment may be made impressive, spectacular, pleasant, or painful. Drugs, use of complicated machines for administering a shock, the use of a hypodermic needle in injecting solutions, the use of a rest method in treating neurasthenia, and many other techniques impress on the patient's mind that something is being done for him and that he is being aided back to a state of health.

In the use of the catharsis technique, the patient is encouraged to discuss his symptoms with the physician. As he gains confidence, he talks more freely and not infrequently he will bring to light some of his fundamental desires or some shock which was experienced in the past. These revelations aid the physician in the reorientation and reëducation of the patient. The sharing of thoughts with those in whom one has confidence seems to relieve many tensions and stresses. Often through the self-expression of difficulties, and through the aid of the physician, the patient may begin to understand himself and his circumstances. When he himself has an understanding of the situation, then can he effect an adequate self-adjustment.

Some irritating stimuli may lose their potency when the patient is constantly exposed to them. A fear of snakes may be overcome by reading all about snakes, talking about them, seeing them at proper distances. Desensitization, or nega-

tive adaptation, is especially effective in dealing with certain fears.

Reëducation consists in getting the patient to respond in a new way to old stimuli. The patient learns to look at his environment in a new light and at his own symptoms or maladjustment differently as a result of a remedial program. The process consists in the development of new, wholesome, attitudes and habits in place of the unsatisfactory responses. For this method to succeed, the patient must feel the need for the program. He must want to get well. He must cooperate. He must have complete confidence in the physician or nurse. He must develop some new life interest. By changing to a more favorable environment, recovery may be expedited. Otherwise, it may be necessary to reëducate the members of the patient's family and his friends if successful adjustment is to remain permanent.

The ends of psychotherapy can sometimes be realized more efficiently by using various occupational and recreational therapies, treating or changing the environment, or reconditioning the patient in his basic habits of eating, sleeping, elimination. Various occupational and recreational facilities are used in most of our modern institutions. The patients engage in activities that occupy his attention, that give him a contact with reality, and which help build up the idea that he is normal.

The Integrated Personality

Out of the vast array of materials, clinical studies, and expert observations, certain basic facts emerge concerning who is a well-adjusted individual and what principles must be observed in attaining the goal.

The well-adjusted individual must know himself, his strengths and weaknesses, his motives and ambitions. He must know when he is rationalizing and when reasoning, when he is honest with himself and when he is deceiving himself. He must be oriented to his environment, feel at home in it, perceive his relationship to it. Otherwise, there will be confusion, detachment, and undirected energies.

The well-adjusted or wholesome personality has an ob-

jective attitude toward others, toward his work, toward life itself. He faces the facts. If a physician or nurse, he views his patient as a "problem to be solved," not just an uncoöperative patient. His every expressed word or act is a part of the total situation that needs resolving. A delinquent, a syphilitic, or a tuberculous patient are viewed alike in the sense that they constitute problems. Instructors, floor supervisors, and head nurses must be understood objectively by the student nurse, and reasonable adjustments made. This objective attitude can be cultivated by developing the habit of performing concrete objective tasks in one's daily life. A training in the sciences and the scientific method help to impress on us the necessity of an open mind, tolerance, a mind free from bias and prejudice, and the absolute necessity of basing conclusions on facts and not on subjective moods, likes, and dislikes. In all problem situations, logical, meaningful, worth while relationships should be noted. The mingling with people, participating with them in social functions, visiting new scenes, and meeting strangers tend to give to one a more objective attitude.

The solving of problems when they arise and the facing of reality by active attack on the problem are indispensable to mental health. Hesitation and delay allow doubts, inhibitions, and tensions to arise which provide an escape, or a delay in facing the issue. Not being able to make up one's mind, or indecisiveness, is one of the worst enemies of mental health. An active and intelligent pursuit of the goal, the making of decisions and acting on them is the road to mental balance, poise, and stability.

The well-balanced person has a certain flexibility in his thinking and actions. He can adjust to situations. He can understand others and their adjustments. He is not an extremist. His emotional control enables him to view each problem objectively, impartially, and not according to whims of the moment. The flexible mind will bend but not break.

Each individual needs a dynamic conscious, socialized goal in life. A definite aim controls behavior, gives direction to it, and in the process integrates the individual. The person who has no goal is lost. The patient who feels that

he has lived his life, that he has nothing more to live for, is far more likely to succumb to his ailment than the individual who has "everything" to live for. If one has a goal and realizes he is making progress toward it, the sense of security is increased.

Health, freedom from physical disabilities and weakness, and the absence of tensions and stresses, provide a sound basis for mental health. If the body functions badly and the reserve of nervous energy becomes depleted, the condition will be reflected in the behavior. A sound body is needed for a healthy mind.

The well-adjusted individual forms friendships, learns to give and take in his relations with others, learns to be both a follower and a leader. He likes people. The maladjusted person fails to get along with others. He is not coöperative and is often stubborn and negativistic. He is likely to be suspicious of the motives of others or at least to misunderstand them.

The integrated person possesses an optimistic, well-balanced, and rational view of man and the world. He is optimistic because he has insight into problems, reasonable success in his living and work, and an abiding religious (or philosophical) faith. He has a sense of humor which enables him to view events in a true perspective, to deflect disappointment, and to realize that the difficulties of today are soon surmounted or forgotten.

Briefly, good mental health is dependent on sound physical health, a goal, active and successful striving toward its attainment, an objective attitude, facing reality, making friends, a sense of humor and an optimistic, religious view of life.

If the nurse is to incorporate the principles of mental health into her contacts with patients, she, first of all, must have a healthful mental attitude. She must be well-adjusted if she is to gain an insight into another's problems. She must be aware of her own degree of mental health, recognize her own problems, know how she solves them. Through recognition of her own problematic situations, she can display a more human tolerance toward others, for the person who has risen successfully above his own difficulties

is better able to help or understand another than is one who neither realizes the source of his own conflicts, nor knows how to find his own complacency and peace of mind.

From the discussion of this chapter it becomes evident that mental hygiene is the application of effort directed toward successful social relationships. Its use aids people in coöperating successfully and peacefully in all functions of life. It helps various personalities to adjust to one another, for in group living everyone encounters thwarting obstacles due to the rights, privileges and desires of others. It fortifies people to adjust to life as it is. The individual can be freed from both major and minor conflicts which inhibit his activities, thus allowing him to develop to the fullest his potentialities. In so doing, he attains freedom and greater ability to solve the problems at hand. Upon their successful and satisfactory solution depends his happiness.

So mental hygiene in its broadest sense aims to develop the social type of personality, the type of personality who realizes that his own best interests and those of society are one and the same and who, therefore, so adapts himself to others that he can live peaceably and happily with his fellow men and work with them for common ends. We all well know that real mental hygiene treatment does not consist of a prescription that can be filled at the corner drug store. It does not consist, save in certain neurological cases, of any physical treatment of the brain or nerves. What it does consist of is usually a series of recommendations for reëstablishing the individual's contacts on a more normal plane with all those about him—his family, his friends, his fellow employees, and so forth. In short, mental-hygiene treatment is essentially social.[2]

QUESTIONS AND EXERCISES

1. What is mental hygiene? Is it a science or an art? Why?
2. What principles and facts of mental hygiene are used by the best nurses that you know?
3. How may mental hygiene help you in everyday living?
4. Make a list of common maladjustments in normal people. Try to find the cause or causes of each and indicate the remedial program for each case.

[2] *Ibid.*, p. 9.

5. What varieties of adjustments have you noted in people? Do you believe that adjustments by compensation, rationalization, projection, daydreaming, and functional disabilities are socially desirable?
6. Why are withdrawal adjustments generally more serious than those about which the individual attempts to do something?
7. How may a student nurse overcome feelings of homesickness? feelings of inferiority? self-consciousness? the fear of failing the course?
8. What is a "nervous breakdown"? How may it be prevented?
9. What facts and principles of mental hygiene are particularly pertinent for the happy functioning of a family? a community?
10. What are some of the fundamental personality needs of each individual? Of what importance are feelings of security, personal worth, and success?
11. How may religion contribute to happiness and personality integration?
12. Justify the statement that the hospital staff should be mentally healthy.

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CHAPTER XV

PSYCHOLOGY OF THE PATIENT

Health Versus Disease

Health is that condition of the whole individual which gives the optimum of freedom for carrying on all kinds of mental and physical activities—both for doing the work that life demands and for the enjoyment that attends such activities. Health is a function of the total human organism and it involves both physical and mental aspects. Illness is an organic or functional condition characterized by symptoms and signs indicating the presence of some disorder, disease, indisposition, or infirmity which may be more or less local or general.

Illness may have some basis in a physical or chemical disturbance or injury or it may be "imaginary" in which case the cause can be some experience, repression, conflict or other psychological condition superimposed on a certain body constitution or depleted nerve energy. Illness may be indicated by the symptoms reported by the patient or by outward countenance and other signs, or by evidence revealed by the fluoroscope, x-ray, microscope, laboratory reports, encephalograms, by the ophthalmoscope, stethoscope. Illness may be manifested overtly or not suspected until it has progressed to an advanced degree. It may involve any tissue or all of them. It may be mild or acute. It may follow a given course or terminate sooner or later in recovery as a result of treatment and care or by death. It is something that affects each individual differently although specific ailments do follow more or less the same general pattern.

Factors Influencing Behavior Responses in the Ill

Physical defects and disorders, diseases, and the patient's total environment are reflected in his behavior and unless

his medical and developmental history and whole environment are known as well as the affliction of the moment, an erroneous diagnosis and therapy are likely in many cases. While the signs and symptoms vary with the nature and severity of the illness, the age and cultures of the patient, the season and time of day, the medicines prescribed, the kind of room in which the patient is placed, the presence of others, weather, memories, anticipations, and the like—these conditions are always reflected in the patient's behavior. It is important that nurses learn what conditions produce undesirable responses and what situations will tend to elicit desired behavior.

Noise.—What is music to one person may be an extreme annoyance to another for any unpleasant sound is noise. Noise produces fatigue, increased blood pressure, decreased working and mental efficiencies in the normal. If work must be done in the presence of persistent noise, the nervous system requires a more intense mental application to adapt itself to that disturbance. Fatigue is the end result. Sensitivity to noise varies with each individual from day to day depending on his health, fatigue, and mental attitude.

Stimuli which evoke pleasing or neutral responses in a healthy individual may have quite the opposite effect on the ill. Loud and persistent sounds coming from a neighbor's radio may be disregarded by the healthy whereas these sounds may irritate the sick. Noise provokes irritability and restlessness in those slightly indisposed, fatigue and exhaustion in the acutely ill. Inasmuch as the sick have greater sensitivity to irritating noise, a quiet, peaceful environment has an important bearing upon the relaxation, rest, and hence recovery, of any patient.

Odors.—A healthy individual may enjoy the aroma from a cigar or be indifferent to ether fumes coming from an operating room, but a patient may be considerably upset by them. Perfumes, even the fragrance of flowers and odors from food, may be disagreeable to patients, particularly those suffering from gastric disturbances. Therefore, for his comfort, it is advisable to keep all odors at a minimum. Every effort should be made to prevent offensive odors from lingering near the patient or in his room for these can be-

come quite disturbing and embarrassing to him. An insensitivity to a particular odor is developed when one is constantly in its presence. This fact is indicated by the newcomer's immediate detection of certain disinfectant odors characteristic of most hospitals, whereas the hospital personnel may be entirely unaware of their presence. The only odor about the nurse that is pleasing to the patient is the clean, immaculate odor coming from a well-groomed body and fresh, clean clothing.

Fatigue.—The healthy resist fatigue better than the ill or convalescent. Fatigue from physical exertion may be desirable within limits under normal circumstances but with the ill, excessive and fatiguing exertion may do damage requiring days to undo. A prolonged or severe illness may leave the patient in such a depleted state that the mere response to a question or the lifting of a hand is a great effort. Even as small an expenditure of energy as is required during the administration of a bed bath or change of linen may be exhausting to a prostrated patient and he will prefer to be "let alone" rather than be disturbed. The presence of others in the room may be fatiguing. When any such conditions exist, the nurse needs to exercise every precaution in eliminating unnecessary disturbances. Neither should there be any needless delay in the completion of her work, once it is begun. Talk should be reduced to the minimum and no attempt made to engage the patient in conversation. She needs to work quickly and quietly, for the patient profits greatly from the provision for comfort, and the intervening, long, uninterrupted periods of rest and relaxation. The nurse should also bear in mind that the normal controls may be seriously disturbed in fatigued states, therefore evidences of temper and irritability are likely to appear.

Sleep and rest.—The loss of sleep in a vigorous young man or woman, while taking its toll, may not upset the body processes in the manner it does to the patient who loses sleep because he worries about not sleeping, or the patient who is seriously ill. Sufficient sleep is desirable during illness because it affords complete relaxation, reduces muscle and nerve activity to the minimum, and provides for restoration of energy.

Rest does not necessarily result from lying down or maintaining muscular inactivity. The tense muscles, the strained facial expression of patients who force themselves to lie quietly in the hope of obtaining rest, are obvious indications that much effort is being exerted in maintaining that motionless state. It is the degree of relaxation rather than posture that determines the available amount of rest or sleep. Putting a patient to bed does not necessarily insure his receiving the prescribed rest; the mind must be at ease before the body can relax. Sleeplessness of patients in the hospital is due largely to disturbing noises, the strange environment, worries over their own illness, concern for situations at home. And the pain and discomfort of sickness increase the tenseness. Most insomnia is caused by the presence of unsolved conflicts of the mind. Tossing, turning, frowning are manifestations of these tensions and any unfortunate emotional experience during the day is likely to carry over to the night.

Many resort to such schemes as counting sheep in the hope of inducing sleep. Such measures are usually ineffective for they only serve to repress further any unpleasant ideas. They lead one from, rather than toward, sleep. In other words, the state of sleep cannot be forced by any exertion of will power. It will intervene of its own accord, if there is sufficient mental and physical relaxation. Rather than attempt to check one's thoughts, it is best to allow them to wander. The approach of sleep is indicated by those disconnected thoughts, or ideas that pass fleetingly through the mind. The effort used in attempting to suppress them will result in wakefulness.

A warm bath or certain foods or fluid given at bedtime may be effective in producing relaxation. Warm milk is frequently offered but some patients find it unpalatable. Many people relish a particular food or beverage at bedtime. Giving the patient what he prefers, insofar as is possible, brings to him a certain amount of satisfaction. An example is that of a sixty-nine-year-old patient who awoke habitually at midnight and refused to sleep until she had been given a cup of strong tea. Theoretically, that stimulant should have kept her awake for several hours, but instead she dozed im-

mediately afterwards. Even the various sedatives seem more efficacious if the patient has confidence in their potency. The type of drug to which he may have become accustomed will influence his reaction. It is not uncommon to see patients, who, because of the nature of their illness, have received numerous medications hypodermically, lie awake for several hours after an oral sedative has been given but fall asleep immediately after the administration of a hypodermic injection of sterile water.

Nutrition.—In health there is a proper state of nutrition but in some diseases and disorders there is a loss of appetite, food is not utilized and there is a loss of weight and strength. On the other hand, many diseases occur primarily because of inadequate nutrition. Strong emotional reactions such as anger and fear, occurring in a state of either health or disease, inhibit the functions of the digestive processes.

As a more rapid recovery depends in part upon the assimilation of a wholesome diet, provisions should be made for stimulation of the appetite and enjoyment of meals. Convalescent patients usually look forward to meals as being welcome interludes of the long, monotonous day. Maximum satisfaction is derived if all meals are served amidst pleasant surroundings. Soft low music from a radio at mealtime is pleasurable to most people. Cleansing of the mouth and teeth prior to the serving of a meal may stimulate a greater desire for food. No food, regardless of how attractively it has been prepared and served, can be relished by most people under ordinary circumstances unless the mouth is in a desirable state of cleanliness. One who is suffering from *anorexia,* or loss of appetite, will be repelled by a tray laden with much food, whereas he might be tempted to eat if the servings were small, dainty and attractive. He will not be likely to savor a meal if he has just experienced or anticipates a painful treatment or dressing. Nor are unpleasant sights, sounds, odors or bodily discomfort conducive to the stimulation of appetite.

If a helpless patient needs to be fed, the nurse should not disappoint his anticipation of the meal by expecting him to eat too rapidly. Even though she is pressed for time, to sit down beside the bed will consume no more time on her part

but will add immeasurably to his relaxation, comfort, and satisfaction.

A patient's likes and dislikes of food should be given consideration for his past habits are not likely to change during illness. On the other hand, vicarious cravings for certain articles of food not ordinarily eaten may be noted in even mild illnesses. If, however, preferences exclude essential dietary elements, those foods may need to be gradually included in the diet. Inasmuch as race and religion influence dietary habits, consideration needs to be given to those preferences in so far as is possible, for one who is accustomed to certain foods may be dissatisfied with those which he does not ordinarily eat.

The relief of hunger and thirst is a fundamental drive, and extreme measures may be used by the normal person to satisfy those desires. The withholding of meals until certain treatments are done often results in considerable anxiety to patients who, at the time, experience a greater need for food than for any therapeutic measure. When certain foods or fluids are restricted from the diet, the patient is likely to become unhappy or dissatisfied. Many go so far as to believe themselves maltreated because of their failure to understand the necessity for rigid restrictions. An adequate explanation of the reasons underlying the prescribed diet needs to be given if the patient's coöperation is to be expected. Willingness of the nurse to employ thirst-relieving measures, as rinsing the mouth, moistening the lips when fluids are forbidden gives much satisfaction to the patient.

Diseases.—Certain diseases affect the personality of the patient. Some glandular imbalances produce body changes that make the patient an object of sympathy or curiosity. This disorder may affect the patient both directly and indirectly, as we have seen in Chapter IV. Diseases of the thyroid gland produce marked personality changes; *anoxemia*, or the presence of toxins in the body, may render the patient irresponsible; the anæmias and peptic ulcers have an associated irritability; typhoid fever is usually characterized by an apathetic condition; many tuberculous patients are alert and persistently optimistic; patients with pneumonia are also alert but apprehensive and restless; hepatic disorders are

usually marked by mental depression. Certain forms of heart disease create a state of great anxiety; an abnormally high body temperature produces delirium and a low body temperature produces lethargy. The body processes are unable to function properly if the temperature varies too far from the normal, and all functions will cease entirely if wide variations are maintained over a prolonged period of time. Thus we see that psychologic changes are associated with, or elicited by, various physical ailments. It is important that nurses recognize these changes as being a part of the disease process rather than reflections of the patient's normal personality, for such understanding creates greater tolerance on her part and indicates that both body and mind must be treated in any disease.

Drugs.—Drugs produce different and sometimes unexpected behavior responses. Hypoglycæmia, that might result from the action of insulin, produces profound personality changes. Some drugs impair the senses, inhibit judgment, and make the individual irresponsible. Some medicines and therapies will relieve nervousness and allay pain; some produce a state of euphoria or hilarity or excitement. Many individuals have idiosyncrasies to various drugs and may react in an opposite manner than the one intended, or the drug may have greater or less effect than that ordinarily obtained.

Certain medicinal drugs may inhibit or decrease cell activity and sensation. Morphine relieves pain sensation, depresses the respiratory center and slows the breathing rate. Hypnotics lessen the sensitivity of the brain, hence sleep results. Anæsthetics may be used locally to produce insensibility to pain or generally to cause a loss of sensations throughout the body. Atropine, by paralyzing the nerve endings in the iris, allows the pupil of the eye to become dilated.

Other drugs stimulate or increase cell activity and sensation. Caffeine is a stimulant and even its presence in coffee and tea has a stimulating effect. Strychnine is a well-known stimulant of the nervous system. Thyroxin stimulates oxidation by increasing the metabolism of the cells of the body.

Opiates are used medicinally to produce sleep, rest and to

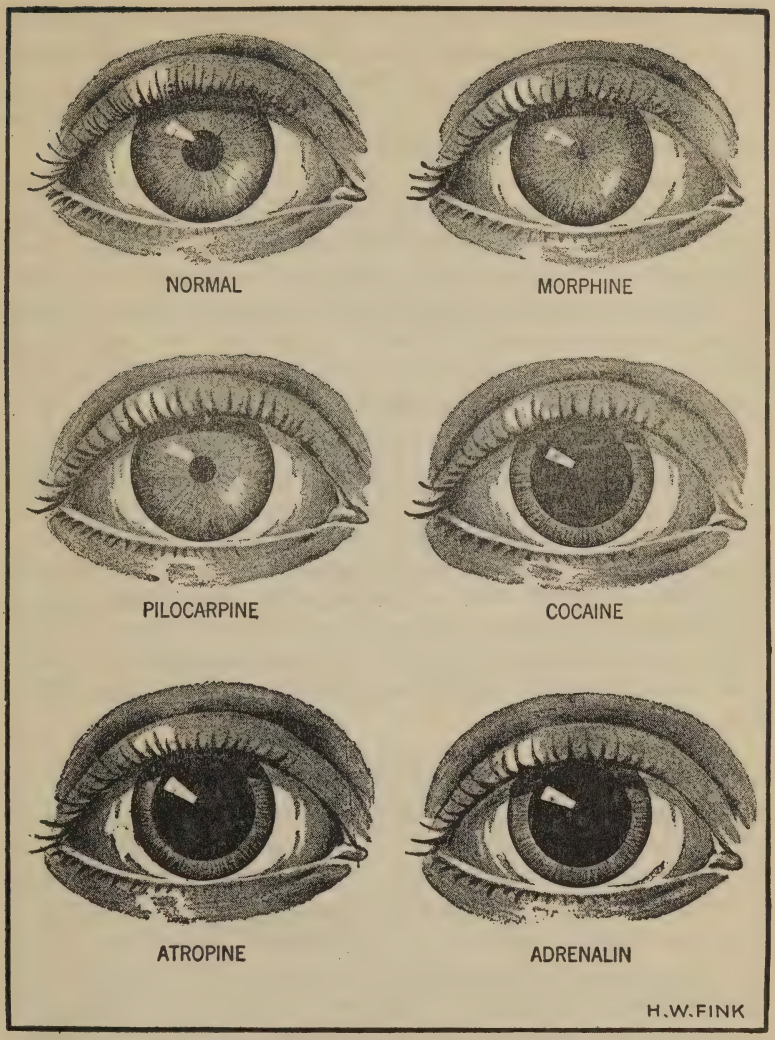

FIG. 61.—SHOWING THE EFFECT OF CERTAIN DRUGS ON THE PUPIL OF THE EYE.

relieve pain. However, they are used habitually by some who have become addicted to their use, as an escape from conflicts, to gain stimulation or forgetfulness as the need may be. Opium and morphine furnish a temporary escape from life's problems but they gradually lead to a state of

physical and mental debility. Alcohol decreases self-control and will-power; many find it an effective means of obtaining relief from unhappiness and depression. Cocaine produces stimulation and exhilaration but it, too, leads to moral degradation and physical debility.

Immediate environment.—Certain tints of walls, arrangements of pictures and furniture and selections of flowers are more satisfying than others. Plain white walls and white furniture in hospitals are giving way to color or tints. Colors have a distinct psychological reaction upon patients. These vary, however, with each individual for certain experiences or memories that may be associated with a color may make it pleasant or unpleasant.

The colors in the red end of the spectrum have an exhilarating effect and are often beneficial to the mentally depressed; the shades from yellow to crimson are exciting; blue and green tend to subdue irritated and nervous individuals; shades of yellow-green to blue are tranquilizing in their effects; shades from blue to purple tend to subdue while brown is depressing, especially those shades of yellow-brown as found in natural and golden oak. White is disliked by many because of its glare. Shades of black, blue, violet, and red absorb light while yellow reflects it.[1]

The more closely the immediate environment resembles a natural, homelike atmosphere the more pleasing it is to the patient. People vary in their sensitivity to surroundings; the poor arrangement of a beautiful bouquet of flowers may be unnoticed by some whereas others may be annoyed by the æsthetic neglect. A picture that is hanging crookedly or a spot on the wall may present an irritating fascination and some patients find themselves unable to keep their eyes from these defects. All equipment suggestive of illness and treatments should be kept out of sight. No patient enjoys looking at an array of medications, trays, or a glass of nourishment which was but partially consumed.

Some, due to their type of illness, as a communicable disease, must be kept in an environment devoid of all decora-

[1] M. R. Smith, and colleagues, *Principles of Nursing Care* (Philadelphia: J. B. Lippincott, 1937), p. 249.

tion or excess furniture. But even an isolation unit need not be too objectionable if it is kept neat and clean. In fact, an orderly, clean, immediate environment is essential to the psychological well-being of the sick. An untidy room or unit is displeasing to the eye and is not conducive to the maximum mental relaxation.

Bedside tables and call bells should be near at hand so that the patient can obtain what he desires. To be left helplessly alone, without the means of procuring the necessary attention can become a distressing or even frightening experience.

Personal appearance.—It is often said that the manifestations of interest in personal appearance of one who has been acutely ill is an indication of recurring normalcy. Comfort and relief from pain and other distracting symptoms are the desires uppermost in the mind of the very sick. The impaired functions of both body and mind render them more or less insensitive to subordinate concerns. The discouraged, despondent, unhappy individual, however, may show disinterestedness in appearance even though his illness is not acute. Or the person who has never given much thought to the way he appears to others may be lacking in this sensitivity.

The convalescent patient often prefers that visitors do not see the detrimental evidences of his illness. A young girl or woman will often want to look her prettiest when visitors are expected. This is evidenced by their disapproval of the simple hospital gowns, and the plainly dressed hair. Nicely manicured nails, applied cosmetics, a becoming coiffure and bed jacket enhance her general morale. Many hospitals are making use of this principle by incorporating beauty salons where the convalescent or chronically ill can obtain facials, haircuts, shampoos, and manicures, all of which stimulate interest and personal pride and foster a feeling of well-being. Seeing themselves personally attractive may be one means of dispelling the discouragement or despondency of certain individuals.

Weather.—External stimuli such as the weather, the time of day, climate, altitude, circulation of air and humidity affect the sick or well individual. How the weather affects

the moods of individuals is common knowledge. A rainy, gloomy, cold day is depressing to most people; occasionally, snowy or windy days are exhilarating but they too become depressing if the same weather conditions prevail for long. A clear day brings cheerfulness and added energies, whereas a warm, balmy spring day may produce a languid reaction. Certain diseases are associated with the seasons and weather. Pneumonia, upper respiratory infections, and other communicable diseases of an epidemic nature occur more frequently during the cold seasons; rheumatic fever is more prevalent during the late winter and early spring, while the incidence of typhoid fever and hay fever is greater during the late summer and early fall. Heat prostration and sunstroke occur during periods of high atmospheric temperatures, frostbite during low temperatures. People afflicted with arthritic pains will testify as to their increased severity during cold, damp weather.

Time of day.—People are even affected by the time of day. We know that some are amiable, cheerful, energetic and enthusiastic in the morning and there are perhaps as many who feel glum and irritable in the early hours. The voluntary early-risers usually experience their greatest output of energy during the first part of the day. Those who begin work early because of necessity often require considerable self-discipline to put forth immediate optimum efforts. The reversal of customary working hours, as experienced by nurses and others who may be required to do night duty, necessitates adjustments of an unusual nature in that sleeping, eating and recreational habits suffer a certain interference for the time being. People even associate certain times of day with certain thoughts. Thus, the early morning may be given over to plans for the day, the evening to the reflections upon the successful or unsuccessful accomplishment of those plans, or the pursuit of recreational activities.

The nurse, in recognizing these various possible effects upon the patient, will have a more adequate understanding of his moods. She will know when not to disturb him unnecessarily, when he will most enjoy diversion and when he prefers quiet relaxation. Furthermore, she will understand the difficulty that many patients experience in adjusting to

hospital routines that require lights out at nine o'clock and early awakening in the morning.

Climate and altitude.—Climate always has an influence upon individual activity. While some climates stimulate activity, others inhibit it. More work is accomplished in temperate zones than in those near to the equator. Extremely hot or cold weather does not allow for much activity beyond that of providing for mere sustenance.

The altitude also affects activity because of its variation in the amount of oxygen. A high altitude has a lesser degree of oxygen than have the low lands and people living in the high mountain areas are usually less active and slower moving than those inhabiting regions of low altitudes. Symptoms of anoxemia are experienced by anyone who goes into high elevations quite suddenly. People suffering from diseases as pneumonia and cardiac disorders are likewise affected by the insufficient amount of oxygen in higher areas.

Temperature, humidity, and ventilation.—An atmospheric temperature of 65° to 75° F. maintains the optimum physical comfort, although the temperature conducive to greatest comfort varies considerably with each individual. The body loses heat if the surrounding air is cooler than the body temperature and less heat is lost through conduction if the atmospheric temperature becomes higher than that of the body. The sick are less able to adapt themselves to sudden temperature changes than are well people. Upper respiratory infections can develop quickly in one unaccustomed to cold temperatures or inadequately clothed.

Temperature and humidity need to be considered simultaneously. The higher the atmospheric temperature, the greater becomes its ability to withdraw moisture from the air. Anyone who has remained in a room with a high temperature and low humidity has experienced the discomfort of the hot, dry air. Patients suffering from upper respiratory infections experience increased irritation of the mucous membranes from dry, warm air. This irritating effect can be relieved by increasing the humidity. People are more free from colds when the proper moisture is present in the air they breathe than when it is too dry. On the other hand, a high humidity will cause discomfort because the ex-

cessive moisture prevents evaporation of perspiration from the body. A humidity of 25 to 40 per cent is dry, whereas that from 60 to 80 per cent is uncomfortable because of the moistness. A temperature of 68° F. should be accompanied by a humidity of approximately 50 per cent. For the maintenance of maximum comfort, the humidity should be increased as the temperature rises.

Evaporation of moisture from the skin is reduced if the humidity of the air is increased or if there is insufficient movement of air. Even though both temperature and humidity are high, moving air reduces the body temperature and increases evaporation by bringing drier air near the body. It is for this reason that electric fans add to the comfort on hot moist days when little heat is lost from the body by either evaporation or conduction. If air is not moving, the temperature of the room at breathing level may be higher than that near the floor and the feet may be cold whereas the remainder of the body may be warm. The effects of a poorly ventilated room are not due so much to an increase of carbon dioxide and decrease in oxygen as to the increased humidity and temperature and lack of air movement.

The comfort sustained by occupancy of oxygen tents and oxygen chambers is due not only to the increased oxygen concentration but to the controlled temperature, humidity, and air movement. Air-conditioned units, because of their control of immediate atmospheric conditions, provide a more comfortable hospital, home, and business environment.

Attitude and Habits of Patients During Illness

The attitude of the patient is a great asset or liability depending on its nature and potency. The behavior of the patient is the reflection of that attitude. As has been pointed out elsewhere, many factors contribute to the development of an individual's behavior, conduct, or state of mind. Consider the influences of culture and education. Patients who are refined and considerate in their everyday life will be refined and considerate patients, but individuals who dominate and dictate to others or who are inconsiderate

will act in much the same way when they are ill. To them, the nurse is but a servant or slave to wait on them or to answer every bidding. Some patients will get attention, impress their importance, or require endless services by employing all manner of devices such as complaints, stubbornness, negativism, noncoöperation, suspicion, disobedience, and carelessness. Others derive ego satisfaction by acting in a refined, coöperative manner even when ill. As the great Daniel Webster lay dying, he inquired if he had said anything in his last hours that was unworthy of him. Here was a patient who sought to live by an ideal even in his dying moments. His ego satisfactions came from living up to the ideal. Age, sex, and race are factors in the behavior of patients but the culture and education of the patient are of more primary consideration. If not too ill, young children may be restless and hard to manage. Patients of low mentality may be harder to care for because they do not understand what is wanted of them or why certain treatment is instituted. The neurotic, emotionally unstable, and psychotic are still more difficult as patients and special work in psychiatric nursing is usually required of nurses who work in this field.

Strains and Stresses Common to Patients

What is the patient really thinking when we ask him how he feels? Does a reassuring answer conceal his actual emotional and physical condition? Do the responses express part, whole, or none of his thoughts? Is he attempting to hide definite fears and worries? What thoughts are actually going through the mind of the patient who is to undergo an operation in the near future? Why does this young man persistently urge to be allowed to return home even though the physical diagnosis and temperature chart indicate that he is suffering from an acute illness? Why has this woman become so utterly despondent even though the physician has assured her of complete recovery within a very short time? Why does this patient coöperate so eagerly with the doctors and nurses in her prescribed treatment while another refuses her medication? The answers to these questions may

be many and variable; they can not be obtained from any superficial examination, for reactions of patients may have their roots in fears, hopes, conflicts and desires of long-standing situations. On the other hand, small, seemingly inconsequential incidents or circumstances which arise during the course of illness may comprise the basis for certain attitudes. A nurse cannot be expected to know each patient sufficiently well to understand all of his reactions but she can become aware of circumstances that are likely to produce untoward reactions in anyone. And she needs to keep in mind that the patient does not always reveal the cause of certain stresses and strains. Neither does he always speak of, or even admit the existence of, anxieties. But they may be manifested through various forms of behavior which the nurse will need to interpret in order to help solve the underlying problems.

The illness.—Any sickness, being indicative of a disorder of health, is disconcerting. There is practically no one who is not disturbed by his plight when illness comes and some are more obviously distressed than others. One unaccustomed to illness may appear apprehensive of treatment, fearful of complications, and make many complaints in even a minor illness. Others may have experienced repeated illness or operations, and are able to endure much pain and discomfort with little complaint and still hold great confidence as to their ultimate recovery. But in all cases, illness requires a tremendous adjustment of individuals. Finding oneself entirely dependent upon others for even the most minor needs is sufficient cause for a certain degree of maladjustment.

Because a patient is quiet, says little, asks no questions and passively accepts all treatment, is no indication that he is free from worry and tension. There are many who feel ashamed to admit their fears, and endure endless mental torture which could easily have been dispelled by a few simple, honest explanations. Others fearing to know the worst will not ask and entertain morbid imaginings, even as many people refuse to consult a physician concerning their symptoms for fear of his pronouncement of a dreaded diagnosis. Many of these fears can be brought to light by tactful state-

ments or questions which will provide the opportunity for the patient to express himself. No amount of reassurance that the nurse may attempt to offer can give any satisfaction unless she knows the source of trouble.

The patient's awareness of his prognosis has a profound bearing upon his degree of relaxation. A state of complete relaxation is most desirable in the ill for it allows the total strength and energy to be utilized for the recovery process. Apprehension and worry can sap the vitality of a normal individual but during illness this undesirable state of mind can prove fatal.

Insecurity.—The fear of the unknown causes insecurity. Most people can face any situation no matter how unpleasant if they are prepared for it. It is uncertainty that causes great demoralization. Many patients fear hospitals, doctors, or anything that pertains to disease, which is probably attributable to their uncertainty of being able to meet what may be ahead of them.

The patient in the hospital, being separated from all familiar contacts, feels insecure because of the strangeness of the place, the strangeness of the people surrounding him. He is suddenly introduced into a routinized institution that may be different from anything he has heretofore experienced. Hospital odors may be objectionable; things which he sees and hears are distressing; he is forced to eat certain foods in a prescribed diet which he may not like; he must eat at prescribed hours, have his bed made, receive baths at certain times whether he wants them or not; he must submit to examinations and treatments by doctors and nurses who are comparative strangers. Many hospital patients, particularly those in a ward, have a fear of contracting the disease of another. Not realizing the effectiveness of aseptic nursing technique, they often inquire if their dishes, drinking glass, and so on, are segregated.

A sense of insecurity also arises from lack of knowledge concerning the nature of the illness. A patient wants to know the implications of his disease, the meaning of prescribed treatments, diagnostic tests. Because doctors and nurses have such complete understanding of symptoms, tests, test results, and treatments, they often fail to appreciate the

patient's limited knowledge. His anxiety over a delayed diagnosis is not always understood. Oftentimes, it is not the pain but the worry and apprehension that produces an unbearable situation. Evasive answers are often given to his questions or explanations are made in terms outside the realm of his comprehension or he may pick up stray phrases to which he gives the wrong interpretation. The layman cannot be expected to have the understanding of disease, its complications, and treatment as members of the medical and nursing professions; therefore, even though his ideas and beliefs may be far-fetched or even ludicrous, no patient should be made to appear ignorant on the subject. On the other hand, it is often falsely assumed that all patients know little or nothing pertaining to medical subjects, and many intelligent and well-informed individuals are often exasperated by puerile answers and statements. Confidence of the patient can be established more effectively if he knows what is happening, if he is given satisfactory answers on the level of his intelligence.

It is an obvious fact that good first impressions of the hospital personnel is important. Little effort is required to give proper greeting to a newly admitted patient, to give him individuality in addressing him by his name, to manifest interest, kindness, and understanding, but it may require much effort to counteract impressions created by thoughtlessness and careless remarks and attitudes. Few people under stress think logically, hence they need nurses who understand their feeling of insecurity. Much fear and worry can be prevented if the causes are anticipated and all actions explained adequately.

Restrictions.—Any illness imposes a certain amount of restriction upon the patient regardless of his age and social or economic status. The emotional shock attending sudden illness or accidents is in great measure initiated by the abrupt replacement of all normal activities and carefully laid plans with an entirely unexpected and unforeseen misfortune. An accident may assume disastrous proportions when it thwarts the opportunity toward which the individual has long and persistently been working. Nor are those suffering from illnesses which have been more or less ex-

pected, because of their culmination from symptoms of a long-standing nature, exempt from worry and anxiety. The necessary relinquishment of responsibilities, interests and normal environment invariably produces tensions. The working man or woman worries about losing his or her job, the loss of salary, the provision for dependents, and the mounting expenses incurred from hospital, doctor's, and nurse's bills, the relegation of care of children at home; the adolescent is deprived of the companionship and activities of those of his own age; the little child may be lonely and frightened because of the strangeness surrounding him.

Limitations imposed by a short illness, although disconcerting at the time, are relieved after a brief period, and the individual may again assume his normal rôle without having suffered irreparable losses. But those who suffer extended illnesses tend to lose direct contact with the world, friends, business, and pleasurable pursuits. Frustrations are likely to occur through lack of achievement. Loneliness frequently results because the sick one is dependent upon others to come to him. And as is often true in long illnesses, attentions and visits tend to decrease as friends gradually become accustomed to his absence from their activities. This lack of wholesome, constructive outlets is generally responsible for undue projection of the ego. Unless the chronically ill person is provided with interests to replace his curtailed activity, his narrow confines will invariably limit all thoughts to himself and his immediate environment. Concentration on self often interferes with recovery, for minor ills can become unnecessarily important if they receive too much attention. The positive rather than the negative approach to physical health is necessary to mental health.

Rehabilitation.—Convalescence is often a trying period and many patients find it the most difficult part of the illness. The patient's dependence on others during acute illness must gradually give way to independence as improvement takes place. Some maladjusted individuals derive a certain amount of satisfaction in the solicitations and protection during their helpless state; therefore, these people may unconsciously resent being urged to assume responsibility for themselves once more. They may invent excuses and

even complaints which will bring them continued attentions. The great majority, however, are impatient at what seems to them an unnecessarily long convalescence. They are anxious to resume activity, and usually believe themselves sufficiently well to accomplish much more than their still weakened condition would allow. Patients who have never before experienced convalescence from acute illness are often surprised and somewhat discouraged at their weakness and fatigability when they are finally allowed out of bed. They may require a comprehensive explanation of the recovery process and of the benefits to be derived from allowing the body sufficient time to repair damages incurred by the illness.

The illness occasionally leaves the individual in a mental or physical state differing from that which existed prior to his illness. He may temporarily be unable to return to his former work or responsibilities, or may be permanently handicapped. If any impairment still exists when the patient leaves the hospital, some arrangements may need consideration in order to facilitate his care and comfort at home. In fact, the greater part of the convalescent period of most illness may take place at home. As mentioned previously, when any restrictions are imposed there must be substitute satisfactions if the patient is to be kept happy. When he has reached the state of feeling too well to remain in bed, yet too weak to be about, knowing neither what to do nor what he wants to do, he will usually be most grateful for guidance toward some appropriate diversional interests.

Patients in a Ward

Many patients in charitable wards find the hospital offering them a more comfortable bed and better food than that to which they have been accustomed. The hospital becomes a haven of refuge from hardships at home. And many, having no home, discover in the hospital a kindness and consideration for their welfare which is often a new and gratifying experience. These unfortunates enjoy the comfort and protection afforded by their hospitalization. Who can afford to be too critical because they sometimes produce

numerous symptoms which they hope can prolong their stay? If ambulatory, many attempt to show their gratification for rendered services by giving assistance to other patients and offering to help the nurse in small details of work.

Those who are acutely ill encounter many problems pertaining to adjustment during their hospitalization. They find themselves the center of attention in the ward, and the recipients of first consideration by the doctors and nurses. Their needs have priority over those of the less sick. Their slightest complaint arouses a response from those responsible for their care. But during convalescence they lose their former importance and must witness others receiving the attention that was once theirs. They still have complaints but they are regarded with less gravity than before. If these people are not given sufficient help in adjusting to their new rôle, they may attempt to regain attention by becoming querulous, faultfinding, unhappy, insistent upon going home. The failure to recover as rapidly as they expected may even be attributed to neglect of the hospital personnel. This attitude may be reflected by their visitors who, misunderstanding the situation, make complaints about lack of sufficient care. These reactions should not be considered as indications of ingratitude for most often it is lack of understanding which causes the patient to behave in such manner. The correction, or preferably the prevention, of this attitude is the responsibility of the nurse. In practically all such instances, a kindly, sympathetic explanation will eradicate such false opinions.

Many patients have had difficulty in adjusting to life situations and often it is some emotional conflict rather than an organic disorder that has brought the patient to the hospital. Some of these endure more privations and difficulties than more fortunate individuals would believe possible. Because of economic straits, a change of environment cannot be prescribed for even a temporary relief from difficulties; they must return to the same conditions which may have precipitated the illness. Some seek refuge from their troubles in the habitual use of alcohol. While all patients on a busy ward may not receive the same care, the nurse should make every effort to understand each one and his

problems and to help solve those problems or refer them to the proper sources. To these patients, then, the nurse bears a constant obligation of kindness and sympathetic understanding, for anyone, regardless of his station in life, is entitled to maximum consideration when attacked by the misfortune of any illness.

From the discussion presented in this chapter, there emerge these important points: (1) in illness, the ego is projected; (2) the patient's behavior, no matter whether exasperating or amiable, is always the product of the interacting forces of his personality and environment; and (3) the reduction of the patient's tensions and discomforts and the setting up and control of a more suitable environment promote the tendency to recovery. The more the tensions are reduced and the discomforts removed, the better the attitude toward recovery and the quicker the process.

QUESTIONS AND EXERCISES

1. If permissible in your training school, make a case study of a few patients under the supervision of your instructor. Study particularly the relation of the disease or disorder to the behavior—physical and mental.
2. What are some of the common medicines administered to patients and how does each affect the patient's reflexes, feelings, attitudes, and tensions?
3. Make a study of the things that irritate patients and attempt to determine what factors govern these irritations (such as age, sex, race, culture, emotional stability, and the like).
4. Select any dissatisfied patient and attempt to discover the cause of the difficulty. Was the hospital staff responsible for this attitude? If so, how could it have been prevented?
5. When you encounter difficult patients, do you find yourself, (*a*) avoiding them, (*b*) expecting the coöperation to be entirely on their part, or (*c*) do you become interested in determining their particular difficulty? Which of these three alternatives, if continuously practiced, would develop in you the ability to understand and handle people successfully?
6. What factors need to be taken into consideration before advice or suggestions are offered to patients regarding their behavior or attitude?
7. Does the greeting extended to you in another's home affect

your state of ease? During the next three days, concentrate on the manner in which newly admitted patients are greeted on your floor or ward. Is the same graciousness extended to them that you, as a guest, would expect to receive?

8. Why is it equally as important to develop an art of listening as it is to become a good conversationalist?
9. Enumerate instances where patients have manifested evidences of insecurity.
10. Describe an ideal room for a sick patient. Would it be ideal for all patients, all the time? Why or why not?

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CHAPTER XVI

PSYCHOLOGY AND THE ART OF NURSING

As in the professions of medicine, teaching, and dentistry, nursing is scientific in that it utilizes all that is known to be relevant from what science has to offer. It draws especially from biology, physiology, anatomy, chemistry, bacteriology, pathology, physics, nutrition, and psychology. Modern medicine is a highly developed system of scientific facts and principles. Both the physician and the nurse are rigorously trained scientists who use scientific procedures and instruments and who draw upon a comprehensive background developed out of a number of related fields. Many scientific devices have greatly facilitated the accuracy of observation. Developments in the fields of nutrition, human psychology and psychiatry have revealed the nature of many illnesses and in some cases have indicated the appropriate therapy. The trained nurse is well prepared from the standpoint of information, skill, and attitude for the effective performance of nursing duties.

While more and more science is being used in nursing, the practice remains an art. Techniques that are learned in the classroom lack complete fulfillment of their intended worth if their recipients are denied human, friendly consideration. Certain procedures can be practiced with perfect technique but unless the nurse understands her patient, can anticipate his doubts, apprehensions, fear of the unknown, can help to lessen his tensions, prepare him mentally, emotionally, physically, and obtain his confidence, coöperation, and good will—that procedure will not have accomplished its maximum therapeutic effect. Any nursing care is incomplete unless the patient is rightfully considered as being the integral part of that performance; and the patient should never be treated as an inanimate object who is supposed to

accept passively all that is said or done. Some nurses may possess a wealth of scientific knowledge and be prepared to pass examinations in the nursing arts but still fail miserably in the practice of nursing. They fail because they do not know people, because they cannot make the fine adjustments that must be made constantly in their dealings with both the well and the ill. The responsibility for the welfare of another human being is a tremendous and sacred charge. The art of nursing is primarily concerned with the most satisfactory fulfillment of the total needs of the patient. When this concern becomes uppermost in mind all factors that contribute to successful nursing will fall into line. Then all techniques will be practiced with care and safety; the mental, emotional, and physical aspects of the patient will receive equal consideration; all relationships with him and his family or friends will be pleasant and successful. An environment will exist in which kindness, happiness, and goodness prevail, for such surroundings foster peace of mind and more favorable bodily reactions. She who practices the art of nursing in its highest terms should hold to unselfish and worthy motives and be guided in action by a full concept of her total obligations.

Nursing the whole patient.—At the risk of boredom through repetition, emphasis is again given to the fact that any patient is first of all a person with individual needs who has been conditioned by his interests, desires, capacities, family, race, religion, work, environment, economic situation, and the conflicts or satisfactions arising from his desires. Although the effects of an illness may produce a temporary or perhaps permanent modification of behavior, each patient who is put into a sick bed is essentially the same person he was during health. A cardiac disease or cerebral hemorrhage is not separate and apart from all these things which are so intimate a part of the patient; they are superimposed conditions. Treatment cannot be adequate if those factors which make him unique from all others are not given due consideration. It is impossible to treat the disease satisfactorily without treating the patient. We have seen elsewhere how emotions and various factors affect disease. True, an incision may heal and a pneumonia may resolve if no con-

sideration is given to the patient beyond the pathological condition. But if no attempt is made to determine the existence of unfavorable mental or emotional factors, there is no knowing what may be left undone that might help prevent undue worries, unhappiness, frustrations and fearful attitudes. There can never be physical illness without mental and emotional disturbances. The human being is a unit and any factor affecting one part of his being will invariably influence the function of another. It is wrong to speak of physical and mental nursing as being separate fields, for all nursing is both physical and mental. The total picture is only half seen if attention is given to the physical well-being and all other factors are ignored. A patient cannot be relaxed mentally if he is suffering from a cramped position or pain, neither can he be in best physical condition if he is terrified at the idea of an impending operation.

Knowing people is one of the great privileges of living. And no one has a greater opportunity in this respect than a nurse. Most people who find themselves flat on their back, helpless, entirely dependent on others tend to let down barriers which at any other time would be held intact before a comparative stranger. The nurse who understands that each individual has his idiosyncrasies, making him different from any other, and that illness affects the personality, can never consider nursing a mechanical performance of routine duties. A patient has an operation, remains gravely ill for several days but, seemingly through sheer force of will to live, recovers in due time and returns home to her devoted family. Another is operated upon but the measure was instituted too late and the patient has nothing more in life to look forward to than a few more weeks of intense suffering. A sudden accident occurs and the young adult recovers from the anæsthesia to be told that his leg had to be amputated. Still another patient, who has sustained injury to the spinal cord, must endure several days of mental anxiety before knowing if she will ever walk again. It would seem almost impossible that a nurse coming in contact with each of these four patients could feel that her work is only a routine of postoperative duties. They are all postoperative patients, to be sure, and all require somewhat similar physical care but how

different are their emotional needs! No well-informed and conscientious nurse could say that physical care alone comprises adequate nursing for each of these human beings.

Implications of Efficient Nursing

The nurse, no matter whether she is serving in the Army or Navy Nurse Corps, or is filling a civilian position, whether she is working in a hospital, home, the public health field, industry, physician's office, whether she is a teacher or an executive, is extending her efforts, directly or indirectly, toward the maintenance of health and care of the sick. Her work is done in coöperation with the physician, health authorities, or directors of the organization for which she is working.

Practice in any of these fields must be preceded by student experience in hospitals where, under the guidance of instructors and executives, nurses learn from first-hand experience the most desirable methods and attitudes to be used in caring for patients in a satisfactory manner. They learn the cause and prevention of illness, and how to help the sick become well in the shortest possible time. More specifically, this means their every thought, feeling, act, and consideration while on duty should be facilitating the complete recovery of the whole personality (organic and psychic) with the maximum satisfaction to the patient, the attending physician and society. Thus, nursing efficiency is measured in terms of results satisfactorily achieved. If a patient recovers but carries with him a dislike of nurses and a distrust of the medical profession, the nursing was a failure. The art in the practice consists in securing the confidence of the patient and the family, developing optimism in the patient, building up the respect for the physician, if and where needed, obtaining the coöperation of the family or friends, and a hundred other adjustments finely adapted to the specific needs of the patient.

Background of knowledge and self-discipline.—The nurse needs the background of knowledge, and the self-discipline for carrying out rigorously the instructions of the head nurse, physician or any other of higher authority. This implies

dependability, initiative, character and proper training. While medications, treatments and food are given in accordance with the physician's orders, there are numerous instances when the nurse has to assume added responsibility, when she must draw upon a sound background of fundamental knowledge and common sense to guide her and when she must do the thing that her education and experience dictate as the proper thing to do. The physician does not specify that she provide for the patient's physical, mental, or emotional comfort for he assumes that those elements which form the core of nursing will be done without his request. The only discipline that stands steadfast during times of great responsibility is that self-imposed training of mental, moral, and physical powers, that prompts the nurse to do the work and do it in the most effective and satisfactory way.

Confidence of the patient.—The confidence of the patient must be obtained if the nursing is to be successful. No patient can get well quickly and satisfactorily if he does not believe that what is being done is the best thing for him individually. If he wants the window kept closed, the nurse must employ tact if she is to convince him pleasantly that the opened window can hasten his recovery by supplying him with the necessary fresh air. Occasionally when a treatment, prescribed medication, or nourishment is refused, the nurse requires special patience and understanding and self-control in order to regain the patient's coöperation. If at this moment she projects herself in his place, it may help her to understand why he behaves as he does. The factors, however, that may prevent a true concept of another's feelings are his own unique experiences, knowledge, and beliefs which make him and his reactions different from those of the person who is attempting to analyze his behavior. The nurse may believe that she would not be so upset by a hypodermic injection even though she has had no previous experience in being a patient, but that reasoning does not tell her that the patient was conditioned against "needles" through an unfortunate childhood experience. Attempting to understand the reason for behavior rather than the behavior itself tends to establish a more tolerant approach on the part of the nurse. The patient is always more coöpera-

tive if he feels secure in his environment and likes those about him, for the way he feels often determines the way he will act.

The most fortunate patients are those free from worries and fears, for the patient who can relax and is calm and composed has a greater chance of recovery. That desirable state of being may come from the patient himself, from his religion or his philosophy of life but it can also be fostered through the hope and confidence engendered by the nurse. "There is in nursing a power to create in the patient so strong a desire to live that it may become the one factor which decides the issue in his struggle with his disease." [1] At every turn the nurse has an opportunity to use the power of suggestion as a means of introducing desirable ideas or attitudes. By changing a patient's bed from one room to another, or placing him near a window or balcony for the enjoyment of a different view, or radiating optimism even in the face of death, or otherwise pointing up the patient's attitude toward recovery, the nurse is using her most effective tools. The will to live in the patient may be strengthened by the mere presence of a nurse whose sustained interest, cheerfulness, and strength of purpose serve as a tonic to her patients.

There is no substitute for kindness, consideration, promptness in response, alertness, skill in making the patient comfortable, inspiring confidence and hope, and coöperation, giving attention to small details that mean so much to the patient's happiness. These adjustments are grounded on a foundation of psychology which reveals the effects of illness on the personality, the intimate interweaving of mental and physical processes which together constitute the syndrome of the disease. It is a grateful patient who understands that those responsible for his care are interested in him as an individual and not his disease alone, for personal interest embodies a regard for the total individual. Interest cannot be pretended for patients can very soon discriminate between nurses whose work is done willingly or who work under compulsion. Qualities that favor the patient's confidence are

[1] Mary Beard, "Creative Nursing," *American Journal of Nursing*, XXXIII (Jan., 1936), p. 69.

expressed in the voice intonation, the cheery "good morning," the genuine friendly smile, the natural manner, simplicity in speech and action, the attentive, listening attitude when he speaks of complaints, fears, hopes, or the hundred other things that may be on his mind.

It is not always easy to listen to another reveal his problems and troubles. Still, the free expression of these inward thoughts is often therapeutically beneficial. If they are repressed, their importance in the mind of the patient tends to increase and even though their possessor attempts to assure himself that his worries are ungrounded, nevertheless they are there, affecting his every thought and action. To admonish a patient "not to worry" does not solve his difficulty, for no matter how trivial and unwarranted the problem may appear to the nurse, it may be tremendous to the patient. Remember, too, that the difference between subjective and objective attitudes affects points of view. The patient regards his experiences, his pain and problems as they relate to himself, whereas the nurse, not personally affected by any of these situations can look upon them in a detached manner. But this detachment, if it is not carried to the point of indifference or hardness, can aid her in giving the patient the necessary stabilization by drawing upon her knowledge, experience, and understanding of human nature.

There should be no prying into personal matters if the patient is disinclined to talk. The clever and tactful nurse, possibly gaining an insight into a problem, will tactfully create an opportunity for the patient to seize or discard as he desires. But unless the nurse inspires confidence, the patient will not be likely to rely upon her help in acquiring a more peaceful and relaxed state of mind. It is poor judgment to attempt to reassure a patient before the total conditions which could add to the effectiveness of the solution of his problem are ascertained. There is always a need for adding knowledge in those areas that contribute to more satisfactory human understanding, for it is only when we gain at least a partial understanding of people that we can be of any assistance to them. The patient must feel that the nurse herself believes what she is saying. This is evidenced by her sincerity and the effectiveness, directness, and simplic-

ity of expression. He must believe she understands those things about which she speaks. Her power to convince will depend to a great extent upon her own comprehension of the subject under consideration. If the nurse has demonstrated her reliability in small things that pertain to a patient's satisfaction, he will be more likely to trust her opinion in more important matters. It thus becomes evident that the nurse has great need to build up all possible resources that will fortify her in the successful handling of the many and variable situations with which she is faced.

The sense of fitness is a demonstrable quality which a nurse needs to develop in her dealings with her patients. Knowing what is the right thing to do under the existing circumstances is the embodiment of tact and diplomacy. Knowledge and understanding of what is underlying the patient's particular form of behavior will enable her to react in an appropriate manner, thus eliminating embarrassing or even ridiculous situations. Preoperatively, a patient may have been amused by the nurse's fund of humor and joviality but for a few days postoperatively, he may fail to appreciate a continued emphasis on light and humorous trivialities. Or a patient who is depressed by a sudden turn of events may well require an entirely different approach than that employed before the trouble.

Confidence of the family.—It is quite as necessary to gain the confidence of the family as it is to obtain that of the patient and he, being one of them, will usually be affected by their attitude. No one behaves normally when the one dearest to him is critically ill. It requires great courage for the family to leave their sick one in a new situation and in the care of comparative strangers. It is not surprising that they often become highly emotional, overanxious, and disturbed. Their mental anxiety is often much greater than that of the patient if they do not know or understand what is going on. Being a helpless bystander at a time of critical illness is a most difficult experience. They resent the air of mystery or unquestionable authority that is sometimes unwisely assumed when they ask questions about the care, prognosis, or treatment of their dear one. The good will of the family can often be established by accepting their sug-

gestions in matters pertaining to personal care and food preferences if they do not interfere with the prescribed treatment. And a discussion with the family concerning the patient's care, or referring them to the physician for explanation of treatment and prognosis which may not be within the nurse's realm to discuss, will do much toward establishing their confidence. Reassurance of the family acts as a stabilizing force to the patient; the confidence of the patient likewise reassures the family.

Parents of small children need to be instilled with a great deal of confidence as to the care the hospital will afford their child. They cannot know that he does not cry at all times as he does at their departure from him in the hospital. The nurse's attitude toward the child, her technique in handling him and her conversation with the family will, in some measure, reveal to them the kind of a person to whom they are entrusting the child. Mothers often remorsefully blame the child's illness on something they may have neglected. At this point the mother's self-confidence needs to be reëstablished; rather than openly criticizing her for an omission or commission which may or may not have precipitated the illness, it is preferable to commend her for the good care given to the child. Perhaps at a later and more opportune time the nurse may tactfully and constructively offer suggestions for the protection of the child's health.

Health teaching.—Efficient nursing includes not only the assistance toward recovery of health but the maintenance of health. The implications of this ideal and worthy aim employs health teaching along with the nursing care of the moment. When a patient is ready for discharge from the hospital, it is important that he know how to continue the treatment at home so as to attain complete recovery. Also the patient wants to know how his illness was acquired, what he can do to prevent a future recurrence, or how other members of the family can avoid a similar misfortune. Certain conditions at home may have precipitated the present illness and rather than allow the patient to return to them, it may be necessary to attempt the removal of certain factors of that situation.

Sensitivity is required in knowing when the patient is

ready to learn, how to approach him, through what changes of interest that approach can be made and what he needs to learn. In other words, the nurse must make an intelligent decision as to what, when, and how to teach in order to accomplish her purpose with the maximum satisfaction to all concerned.

No two patients are alike and the nurse will need to ascertain the patient's concept of health and disease factors and begin at that level. The general observation of the patient, which might include his attitudes, remarks, and health habits; a knowledge of his previous medical and social history, and the nature of his present illness, would in all probability reveal the necessary basis for teaching. Knowledge of the patient's environment could be ascertained from such sources as Social Service or employees of Welfare organizations. A patient suffering from an acute respiratory infection, or one who had pneumonia in the past, would profit by a discussion of the prevention and early treatment of a cold and precautionary measures to avoid spreading the infection. One suffering from an illness arising from long-standing, and neglected, symptoms would probably be impressed by having pointed out to him the advantages of early medical consultation and frequent health examinations. Faulty food habits, insufficient fluid intake and lack of dental care should be explained in terms of their general effect on the proper state and maintenance of health. Or the nurse may need to help the patient overcome certain harmful emotional or mental habits such as needless and habitual worry, uncontrolled emotional outbursts, selfishness in feeling that their needs should have priority over those of others, lack of consideration for others. The nurse may see numerous ways in which she could aid her patients if they would but carry out her suggestions. Probably it is not amiss to mention here, that in some instances the efforts put forth in teaching may appear to be futile. A nurse should not be discouraged if each and every patient fails to put all her suggestions into use. Some people, in spite of all the influence brought to bear, will continue in their habitual manner but that fact does not hold true for everyone. And probably those who at the time seem to be less impressed with learning new facts

that pertain to their well-being will, at a later time, profit by all that was taught. But in all cases, the selection of those things which seem of paramount importance to the patient's present total health status, if properly done, should stimulate his interest in dealing with further problems.

No patient should be subjected to fatigue through explanations or teaching. Knowing when he is able and ready to learn requires close perception of interest or curiosity on his part. A single question may offer a splendid opportunity. He may inquire why the nurse washes her hands so frequently, why he needs to have a daily bath, why a pneumonia patient on the ward is placed in an isolation cubicle, why the doctor insisted that he report regularly to the clinic after his discharge. However, the nurse needs to remind herself that his interest may not always be directed along the lines that would prove most beneficial to him. But once his interest is established in one thing, the discreet nurse can usually transfer it through association to other things of which he has need.

New knowledge needs to be introduced slowly, proceeding from the less difficult to the more complex as each is comprehended. All teaching must begin with the patient's interest, for learning is then facilitated and the results are more lasting. People will learn readily those things that interest them, but frequently the nurse will need to motivate the interest before any teaching is attempted. She will have need of initiative in developing ways and means of presenting new ideas and facts. And she must ever keep in mind that her methods will necessarily vary according to the intelligence and experience of the patient. Association of a new fact with one that is well known is an effective teaching method for it provides a familiar background upon which to hinge new knowledge. When teaching is done in the hospital, adaptations should be made to the patient's particular home situation so that he can visualize suggestions in terms of his normal regimen.

Criticism of the patient's past failures and mistakes should be avoided, for no one likes to have others infer that his judgment was poor. In most cases, the positive approach, that is, the building up through constructive suggestions, is

more effective and results in better coöperation. Most lay people are left bewildered by many medical terms ordinarily used by doctors and nurses; therefore, it hardly need be said that all explanations should be cast in language that will be readily interpreted. And the more thorough the nurse's understanding of her subject, the easier it will be for her to reduce it to simple language.

Good teaching must be specific rather than vague. Such advice as "get plenty of rest," "drink enough water," "don't work too hard," is often given without specifying exactly what is meant. Interpretations made by the patient often differ markedly from what was intended. The patient should be encouraged to express his own opinions and reactions regarding the attempted instruction. Some may listen attentively but still be out of sympathy with the entire idea which, perhaps, may be due to a single misunderstood factor. Patients need explicit explanation if they are expected to follow through with suggestions for unless they understand they will proceed in their accustomed manner. They must be made to understand the value of the prescribed regimen over that of their former routine. Remember that if nothing was learned, nothing was taught. Repetition is needed. Recall the difficulty you had in learning the steps of a new procedure. Even as you appreciated the patience and understanding of your instructor during a perhaps awkward and unskilled performance, so does a patient appreciate those same qualities exemplified in your attitude when he is in the learning stage. It must never be forgotten that the patient's attitude toward the nurse or hospital often determines how much he will learn, or is willing to learn from them and therefore it is necessary to obtain his confidence and good will. Nothing can be gained if he is irritated, embarrassed, or antagonized.

New and novel ideas need to be incorporated in the teaching of health habits to children. They will be reluctant to comply with orders of "you must do this," "you may not do that." They must be treated as children and all ideas presented on their level of thinking and mental development. Making use of the play spirit will do much towards establishing their coöperation and acceptance of plans. Forc-

ing them into compliance increases their resistance and may build up attitudes of fear and dislike that may carry over into adult life. Such devices as making a game of eating all the food on the plate, being clean, brushing the teeth, taking afternoon naps and keeping their unit tidy are impressive means that can be used with elaboration and differentiation as the need may be. One student nurse, in attempting to teach a four-year-old child to rotate sites of injection for the self-administration of insulin, drew an outline sketch of the human body. She instructed him to place a small cross with a colored crayon on the particular part of the arm or leg of the drawing where insulin was to be administered. He was thereupon instructed to insert the needle in the corresponding part of his body. He was further instructed not to place one cross over another while there remained any appropriate unmarked areas on the extremities of the drawing. Thus the child learned an important fact in a playful fashion.

Many times relatives are hesitant to assume responsibility for the care of a chronically ill patient in the home because they do not understand what will need to be done. While the patient is still in the hospital, the nurse has a great opportunity to teach those who will be responsible for future care. All visitors are usually asked to remain outside the sick room or unit during treatments and routine performances. But when the patient is likely to need prolonged care, it may be advisable to admit the one responsible for his care into the room so as to receive demonstrations of any necessary treatments or procedures. A practical demonstration is always much more effective in such situations than a verbal explanation. Or while a mother is ill, why not call her attention to the way in which an occupied bed is made, or a bed bath is given. If she receives such treatments as an enema, or application of poultices, would it not be advisable to explain to her what safety and comfort factors need to be observed. There are many times when she will probably be advised by her physician to administer these simple procedures to someone in her family.

The public health nurse as a teacher.—A large part of the work of the public health nurse consists in following up her patients in their homes. Problems of a varied nature con-

stantly challenge her most worthy and untiring efforts. The nurse may need to see that the family gets financial aid if the patient is the breadwinner or provide for the care of the children if the patient is the mother. She may need to stress the importance of proper prenatal and post-partum medical supervision; she may need to instruct the mother how to care for a child with a communicable disease in the home. Investigations often reveal some home condition as the direct or indirect cause of the patient's illness, a situation that must be tactfully corrected if recovery is to be insured.

While she is collecting equipment prior to the administration of bedside care, she may be noting the type of food selected for the next family meal. She may notice that a family in poor financial circumstances is unwisely paying a few extra cents to have milk delivered to the door or that a young child returning from school is inadequately clothed for the current weather conditions. Or she may discover that a grandmother who is the sole custodian of an adolescent boy or girl is no longer capable of giving them adequate care and protection. Going into another home, where the bedridden patient is the only occupant, she may render greater comfort by running an errand to the drug or grocery store, or cooking and serving a meal than by giving a bed bath.

The public health nurse, like the institutional nurse, teaches by actions and attitudes as well as by words. However, she is better able to understand her patients because she sees them in relation to other members of the family. She can observe the home conditions and the apparent economic circumstances. These visible factors often enable her to place a finger directly on any important problem. While she can obviously see many factors that need correction, any plan of action needs careful consideration. Her attitude and method of approach should be such as will lead the family to regard her as a most welcome benefactor, not a meddler in their private affairs. Here again is indicated the need for establishment of confidence in both patient and family if she is to be of any assistance.

In the home as in the hospital, the nurse is responsible for recognizing what most needs to be taught and how it can

best be done. However, it is always the family's needs and interests rather than her own that should be expressed and met. Inasmuch as her visits are limited in duration and frequency, depending on the nature of the case, probably a great temptation is to attempt to instill the patient and family with numerous ideas and suggestions at one time. Too much material cannot be assimilated during one visit. The presentation of a few principles, with a review of those plus a few additional ones the following visit, will produce better results. There is danger, also, that too many suggestions given at one time may lead to discouragement, for the family and the patient may feel that they are unable to comply with all the recommendations, whereas if presented step by step the undertaking may seem less formidable. In all teaching, commendation needs to be given to any effort or progress, no matter how small it may be.

In public health nursing as in all branches of nursing, the nurse needs to develop a sound sense of values which will enable her to identify important things and render service where it is most needed and where it will be most effective. In many of her situations the nurse is not in a position to solve the problem herself, but by reporting it to the proper organizations for further expert action, she is fulfilling her maximum duty. Often families who are unaware of available community resources may be aided by being given information as to where they themselves can obtain assistance, whether their needs be economic, social, medical, or recreational. The needs of patients are often best served when the workers of the social and health agencies and the hospitals coöperate closely.

Coöperation with the community.—The nurse, in directing her efforts toward prevention of suffering and disease through skillful adequate bedside care, through her personal attitudes and habits, through her teaching and guidance of patients and their families, is interpreting to the community the ideals of her profession. Because of their existing partnership, the nurse should understand the particular needs, the facilities, the coöperating agencies, and be prepared to comply with increasing broad standards of that particular community in which she is working. The hospital and

health agencies become not only health centers but teaching and guiding centers for community members. Each nurse, in that she is a part of the medical group, shares the responsibility for promoting high health ideals through individual contact or group activity.

The nurse can contribute to the welfare of the community by participating in the promotion of new measures that will serve to advance the interests of humanity, particularly those that apply to the public health. Tolerance and a broad point of view regarding race, religious beliefs, and nationalities is an essential attitude of one who is coöperating in the community interests.

Direction of readjustment processes.—Besides the patient-nurse relation technique, and the stock of skills and habits in performing numerous services for the patient, the nurse may direct various types of occupational therapy or divertissement. All patients except those who are in the acute stages of illness profit by some form of amusement. Whether patients are chronically ill or convalescent, they may be interested in one or more of the various types of occupational therapy depending on their condition. Reading, sewing, knitting, weaving, bookbinding, and many types of construction activities (woodwork, metal-work, jewelry-making), serve to occupy the patient's mind for many hours. When he is happy and satisfied, he does not have time to be worried, discouraged or bored.

Occupational therapy is of particular therapeutic value in the reconditioning and rehabilitation of neurotic patients, the chronically ill, and those who have suffered some impairment such as muscle or joint afflictions. Also this type of therapy is of special importance to patients depressed and worried about their future because they cannot return to their previous occupation. Many times, hitherto unknown aptitudes have thus been discovered which may lead to a new occupation upon discharge from the hospital.

Fine Adjustments to Meet Individual Needs

Good nursing calls for a great variety of thoughtful adaptations to meet individual patient needs. Age differences play a great part in planning the modification of care. A child of

ten years and a man of eighty may be suffering from heart disease. But while the principles underlying the nursing care of cardiac diseases in old and young may be constant, there is a wide variation in the mental and emotional needs of these two patients, and consequently the application of principle must be adapted accordingly.

The young.—All nursing should aim at preparing each patient to live more adequately after he leaves the hospital but in this connection children often present a special problem. Because of affection and sympathy arising from their helplessness, they may be spoiled and made too dependent upon others. When they return to life outside the hospital, attitudes which have been instilled during illness may be difficult to change. A child should be helped to develop attitudes of health rather than illness. Likewise, he should be aided in acquiring habits of self-reliance, coöperation, and responsibility. There is always the danger of developing the attitude of invalidism in a child or young adolescent. To be physically unable to participate in games and sports characteristic of early years is sufficient cause for frustration. As pointed out in a previous chapter, each human being has a fundamental need for success in some line of endeavor. And when these natural childhood pursuits are thwarted, there arises a great need for satisfactory replacement of activity. Rather than continuously admonish a child lest he overexert himself in work or in play, a more wholesome plan would provide for some substitute interest that he could safely accomplish and which, at the same time, would contribute to his ego satisfaction. Attitudes of inferiority arise from his awareness of being different from other children. This danger is not as great in short, acute illnesses as it is in deformities, crippling defects and necessary long restriction from normal activity. But being able to accomplish something which another cannot, thereby winning admiration, particularly from those of his own age, has its compensatory effects.

The ability to keep an ordinarily active child sufficiently quiet and interested during a prolonged convalescence is an accomplishment. Here the mere giving of medications and treatments would not suffice as far as adequate nursing care

was concerned. Some children will coöperate willingly in their treatment; others resist all attempts and will need to be motivated before treatment can be instituted. It is to be understood that children are less capable of understanding what is being done than are adults, therefore greater effort needs to be exerted in securing their willing coöperation.

A young adolescent who is suffering from a chronic condition that prevents him from associating with friends of his own age and participating in activities, needs help in finding something that he can accomplish; he needs to know what are his limitations, how he can live within them and still live a full, useful, and happy life. Unless such an outlook is provided, serious personality maladjustments are likely to arise. An example is that of a sixteen-year-old girl suffering severely from diabetes. As a result of having spent a great part of her recent years in the hospital, she was deprived of normal associations and interests. Her thoughts and attitudes became different from others of her own age. Consequently, life in the hospital was more pleasant than her home life which resulted in her deliberate disregard for the prescribed diet and insulin at home, thereby necessitating frequent readmissions to the hospital. The hospital became an escape from school and unpleasant social situations until her mother was made aware of the existing condition. Then, through her efforts to supply the girl's needs and provide for new outside interests which could not be duplicated in the hospital, the girl became more willing to follow faithfully her health regimen, for hospitalization then meant foregoing her newly discovered plans and satisfactions.

The adult.—Adults occasionally find hospitalization an escape from situations which they cannot surmount but more frequently they are concerned with duties which they find themselves unable to assume during illness. A change of work or relief from responsibilities hitherto pursued may become compulsory. These people need skillful nursing care to hasten their recovery but their even more rapid recuperation may depend upon the recognition of their occupational problems, help in the formulation of future plans, and contact with the proper agents that can give assurance and hope, or assistance in rehabilitation.

The aged.—The aged present their own peculiar problems. Normal deteriorating processes often produce such personality changes as impatience, irritability and willfulness, but more often frustrations are responsible for these transformations. It is a serious mistake for the nurse to assume a patronizing manner, giving emphasis, by tone of voice and the nature of her remarks, to the dependence of the patient. An intelligent person resents any inference of childishness. No one wants to feel that his state of usefulness is past and too often old people are restricted and deprived of their independence. They resent being told what to do, for even though their physical condition may be impaired, they are still independent in spirit. It is necessary to keep them interested in life and feeling important, otherwise a rapid disintegration of personality may occur. Probably the unhappiest experience that can come to most, is the feeling that he has become a burden to others. To become incapacitated or helpless is a situation to which any one would experience difficulty in reconciling himself. It is important that nurses avoid giving any impression of haste or lack of patience. Anyone who has encouraged and aided a patient to regain the use of paralyzed extremities will not soon forget his happiness at his newly recovered freedom.

The neurotic.—Patients suffering from various forms of neurosis require different treatment based on their particular needs. Neurotic patients are the victims of conflicts to which they cannot adjust. Their condition may be made worse by people who attempt to minimize or ridicule their complaints in the belief that there is no justification for such demeanor. As a matter of fact, there is a definite reason underlying their behavior, otherwise, they would never have reached the state they are in. Nor do they understand what is wrong; they often require prolonged psychotherapeutic treatment by experts before they gain the necessary insight to facilitate their recovery. They suffer keenly and any disregard for them merely increases their difficulty. The patient who cries and moans with pain each time that a doctor or nurse comes near, but who when unobserved appears comfortable, has a desperate need for help in his struggle. While expert psychotherapeutic treatment is necessary for

such disorders, the nurse needs always to keep in mind that these people are as sick as those suffering from organic disturbances. To tell such a patient there is nothing wrong only makes matters worse.

Thus to a child, the nurse may be another playfellow, entering into all his interests and activities with enthusiasm, creating the play attitude in all necessary performances. To an active, domineering business-man who has never been ill, it may be necessary that she become stern, matching her own will against his, guarding always against any outward expression of sympathy. With another she may need to assume a gay, light-hearted rôle. Still another may want his nurse to be serious-minded, always solicitous, kindly and sympathetic. Was this nurse who can be so versatile and adaptable inherently endowed with these gifts for adaptation? Probably not, but she has found that successful nursing requires such versatility. She has learned to practice the art of nursing. The greater skill a nurse can display in all these adjustments, the finer the timing, and the better the results, the greater is her art. The nurse who is so accomplished is invaluable. She is no mere automaton for she understands human nature, its pitfalls, its possibilities, and does her best to make those adjustments which will send the individual back into the world, a better, stronger, happier person.

Satisfactory and Unsatisfactory Relationships

The nurse in the home.—It is not an easy task for the nurse to enter into the close bonds of family relationships nor, as has been pointed out, is it always easy for the family to accept her. Satisfactory nurse-family relationships can only be established with understanding and tolerance on both sides. But the nurse, being the outsider, needs to go more than halfway in establishing desirable relationships in the home. If she has an understanding of people and a good cultural background she will not disrupt the routine in the home, make any attempt to "boss" the family or servants, nor make unreasonable demands. Assuming a friendly attitude to all, but avoiding familiarity, displaying tolerance and accepting those things over which she has no right of

jurisdiction, being willing to do more than her actual prescribed duties if the situation makes it advisable, maintaining respect for the property belonging to the family, respect for their interests, desires, habits, likes and dislikes, insofar as these do not actually interfere with proper care of the patient—all of these attitudes will not only avoid disagreeable frictions and resentment but will win respect and confidence for her as a nurse, and as an individual, from all members of the household.

Evidences of good nursing as seen by patients.[2]—Numerous references have been made previously to the means of establishing proper nurse-patient relationships. As heretofore stated, the nurse needs to display certain characteristics, attitudes, and habits that are acceptable to the patient and the physician if she is to be considered competent and professionally desirable. But probably nothing portrays more vividly the possible relationships between nurses, patients, and physicians than verbal accounts of situations which have existed. Many excellent examples of good and poor nursing as related by both patients and physicians have been presented in the book *Nurses, Patients, and Pocketbooks* by May Ayres Burgess. The following extracts are drawn from this book:

The whole household, including the servants, liked this nurse. She was always tactful, quiet, and refined in her manner, often doing work which could not usually be asked of a nurse, when there was illness or absence of servants. At all times, she was professional in an unobtrusive way. She was loyal to doctors and patients, and discreet regarding the personal affairs of the family. We trusted her especially because she did not gossip about previous patients or narrate her professional experiences. She was always cheerful and quietly optimistic.

Tips? No. We offered them but she told us that we had paid her for service rendered and the quality of her service would not be affected by the offer or absence of tips.

She did not expect to be waited on. She soon found adequate substitutions for materials we did not have. To be able to fit in any home is the greatest asset a nurse can have.

[2] May Ayres Burgess, *Nurses, Patients and Pocketbooks* (New York: Committee on the Grading of Nursing Schools, 1928), pp. 205-211.

I liked my private nurse because of her gentleness, her patience, her sympathy and her ladylike manners. Of course she was efficient, but efficiency does not always carry with it popularity—that ability to make oneself indispensable to a patient.

She was a lady and a nurse. She was one who made you feel that you were safe in her care.

She had the ability of getting me to do those things against which I had objected and at the same time made me feel that that was what I really wanted. She was a joy to have near although she was neither young or good looking.

If I objected to something the doctor had ordered because I felt it unwise or painful, she did not attempt to order me about on her own accord. Instead, she was willing to consult the doctor and abide by his decisions. Because of such action everything was adjusted with perfect satisfaction to all. She seemed not to feel as some do, that the doctor was an august person not to be disturbed by any questions from the patient, but was ready and willing to ask him anything I wanted to know at any time.

The nurses made me feel as though they were interested in me personally. Although that was not essential it made me feel at home and not hemmed in by four bare walls.[3]

Evidences of Poor Nursing as Seen by Patients

The nurse came on duty with the odor of cigarettes on her fingers. The patient, who did not smoke, had a temperature of 105°.

She never left me alone with my husband or callers for any length of time. If she left the room, she returned within a few minutes to join in the conversation with those visitors whom she liked. She took an intense dislike to my mother, and when she called, the nurse would sit, silent but always present, in the corner of the room. As my parents had come from a great distance because of my illness and I had not seen them for over a year, it was very difficult to handle the nurse without hurting her feelings and still manage to have a private visit. My family was unable to remain in the city after I returned home, and this made every minute precious to me.

[3] *Ibid.*

The night nurse was very efficient, but one chief objection was her habit of constantly praising a certain surgeon (a very popular one in this city and especially in this hospital) and speaking slightingly in regard to the surgeon I had. To me it was very objectionable, as I had utmost confidence in my chosen doctor. Had I been as nervous then as I was in past years, it would actually have worried me; as it was, however, it merely "riled" me.

This nurse was fine if you didn't want her to do something. Then she would lose all patience. She liked to sit around and gossip about her boy friends, which was uninteresting and rather disgusting to me. I needed quiet. I didn't call her the first night after my delivery. She apparently expected this to continue. The next night, being very uncomfortable, I called her several times. She thereupon reprimanded me, saying that it was all in my head.

After giving painstaking and efficient care during the most serious part of my illness, she wore an air of boredom during my convalescence which irritated me. Since I had been sick for a year and was rather bored myself, my own boredom was about all I could stand.

I think that nurses should not be so sensitive about taking suggestions from the patients. They should not be so dignified that the patient is afraid to ask for what she wants. That seems to be a frequent fault and it makes the patient nervous and uncomfortable. If the nurse feels she knows best, she should be willing to talk it over with the patient, and not be omnipotent and mysterious in her power nor annoyed if her discretion is questioned.

I would have liked her better if she had had a more pleasing personality, and a more general education. I like to think of a nurse as being more than a servant or someone just to carry out orders. Certainly they should be psychologists.[4]

Evidences of Poor Nursing as Seen by Physicians

I dislike very much to have nurses discuss medical topics with patients. Only lately a registered nurse told a patient that she would probably have a cancer because her mother had one, and

[4] *Ibid.*, pp. 211-224.

the woman respected the comment because it came from a graduate nurse.

She had no tact. She seemed to think it was her duty to boss things generally. One of the first things she did was to tell the child's mother what she could or could not do if she expected her to care for the child.

Many times in the presence of the child's mother and other members of the family she made the observation time and again that the pulse was failing; that the child seemed to be turning black in the face; that the patient appeared to be dying.

Nurses on many cases have caused me much embarrassment by criticizing my methods, recommending other doctors, ignoring orders, antagonizing the family, personal uncleanliness, or doing things for the patients that were not ordered.[5]

Evidences of Good Nursing as Seen by Physicians

This is a good nurse, a good observer, gentle, and thorough. She follows orders explicitly and reports changes promptly.

She combined a good technical training with common sense. She carried out orders, but modified them when the need was obvious. She had a proper sense of the dignity of the position without making undue demands on the family. She "fitted in" well.

Anyone who can feed a patient a half pound of cooked liver daily for four or five months, deserves credit for being a good cook and knowing how to handle people, as well as keeping a bedridden patient cheerful. That requires a reasonable amount of personality.

This nurse was pleasant, kind, a good observer, and of great aid in the prevention of an impending psychosis. She was a lady in all respects, refined, absolutely impartial in her observation, and skillful.[6]

In both the adverse and favorable comments made by patients and physicians, references have been made repeti-

[5] *Ibid.*, pp. 158-162.
[6] *Ibid.*, pp. 153-158.

tiously to the nurse's attitudes, her character qualities, methods of handling people and situations, and her ethical decisions. It becomes apparent that all who have need of the nurse's services expect to find in her those qualities that make her work that of an artist or professional, rather than that of a craftsman. And unless she can utilize her acquired scientific knowledge, her skill, experiences, and self-discipline in meeting new and unfamiliar situations and carrying out orders, unless she portrays those qualities that inspire confidence and suggest improvement, unless she has built up personal and professional ideals to which she steadily adheres, unless her work has become an integral part of herself rather than just a means of making a living, she will in no sense be recognized as an artist in her own field. While nursing is founded on scientific rules and principles, it, in the highest sense, transcends definite rules. No rules can govern the perfection of all details that are necessary for the satisfactory care of the sick. And those details in nursing, though seemingly small, may mean all the difference between satisfied and dissatisfied patients.

No art can be acquired entirely from the reading of a textbook or listening to a lecture. But books and lectures can serve as guides in creating an awareness of those aspects which need to be considered. Those who are practicing a profession that is growing and developing as rapidly as the nursing profession cannot afford to keep their minds closed to new ideas, progressive methods and developmental changes. Contributory activity in any growing field requires open-mindedness and a willingness to replace time-worn practices with new improvements. Inasmuch as medical science is progressing constantly, nursing must maintain a comparable level of advancement and achievement if it is to continue working alongside of the medical profession. Because the public is deriving increasing benefits from discoveries and improvements of a medical nature, it rightly expects the nursing profession to progress in accordance with its own worthy function. That task cannot be relegated to a few people in the profession; the obligation falls on each and every practicing nurse.

Each nurse can develop skill in evaluating the results of

her own work. Self-evaluation, accompanied by an aim toward self-improvement, increases the possibility for growth and development, and a conscientious search for increased knowledge indicates an inclination toward further advancement. Accumulative experience of each individual, if used constructively in evaluating activities and results, is valuable in achieving desirable attitudes, methods, and points of view. Each nurse can determine her own degree of acquired skill and art by an objective analysis of the reactions of those with whom she works. While she cannot expect every person to react favorably, she should be able to obtain the coöperation and good will of the majority of those whom she contacts, provided she has made adequate adjustments and has acquired desirable attitudes and habits of work. Probably no physicians or nurses, during their first attempts in the practice of medical and nursing art, are fully adept in all respects but conscientious perseverance toward attainment of higher standards of achievement will bear its own reward.

The Nurse's Own Behavior Reaction

Just as certain situations affect the patient's behavior adversely or favorably so too do situations affect the nurse herself. All the forces, factors, and influences in her social, economic, and psychological environment help to shape her successes, failures, happiness, destiny. But with her education and understanding of humanity and psychological processes, a nurse should be able to achieve a satisfactory adjustment for most conditions and circumstances that will aid her through life. Efficient service rendered the ill, or in the cause of public health, offers its own recompense since satisfactions resulting from a task well done are enduring. Patients may forget services rendered by a faithful and untiring nurse, but the conviction that "he most lives who serves best" should not be overlooked. And the respect and social prestige enjoyed by efficient nurses are rewards of no mean consequence.

Finally the nurse must learn to solve her own problems, whatever their nature, both objectively and wisely. She must develop for herself a growing philosophy of life that will give her a feeling of personal and social worth, a whole-

some regard for others, and a conviction that the nurse must always be a learner.[7]

Many practicing nurses are now working only eight hours a day, which allows more time for leisure and recreation. While student nurses are usually limited in time and funds for recreational activities, many schools of nursing are making every endeavor to provide them with adequate facilities for the harmless enjoyment of leisure time, not only for fun but for their health, and, indirectly, their professional success. Active participation rather than mere observation is recommended. Wholehearted participation in social functions, membership in clubs and alumnae association, a plan for economic security, and a real vision of one's goal or purpose in life are among the factors essential to the development of a wholesome, well-integrated, happy nursing personality. This point of view has been aptly expressed by Manwell, who says that the good nurse "will utilize her leisure hours and especially her days off duty in developing a richness of ideas and of activities which will give strength and guidance to others, and delight to herself. The art of nursing is not alone the art of giving expert physical care; it is the art of teaching a fellow human being that you like him, that you admire his courage, that you are concerned for the welfare of those he loves. It is the art of living so happily, of resting so surely upon the eternal strength of the universe that your own love of living may reach out into the lives of those who most need reassurance." [8]

QUESTIONS AND EXERCISES

1. In what ways does the nurse reduce discomforts and stresses in the patient besides administering medicines prescribed by the physician? How may this process of reduction start in motion a circular reflex that points toward recovery?
2. How can a nurse maintain a wholesome personality or keep well integrated when she spends so much time with ill people whose behaviors are sometimes abnormal and fatiguing?
3. In what respects would nursing care differ for the patient who was prostrated and apathetic due to an acute infection

[7] Cf. F. L. Patry, "The Challenge of Mental Hygiene to the Nursing Profession," *The American Journal of Nursing* (April, 1933), p. 331.

[8] E. M. Manwell, "Three Basic Needs," *The American Journal of Nursing* (April, 1940), p. 408.

and a less acutely ill patient who was despondent because of some conflict within himself?

4. What harm can occur from offering advice to patients where it is obviously not wanted, even though they are in need of it? What alternatives remain for the nurse? Which one would be more advisable to follow and why? Would the same plan of action apply to all patients? What factors may have caused the patient to become resistive?
5. A good nurse is an expert applied psychologist and mental hygienist. Explain fully the implications of the statement.
6. Study the nursing art of the best nurses you have opportunity to observe. What are the techniques used? What seems to be the secret of their success?
7. Try this experiment: Select any patient who hitherto may have aroused no particular interest on your part. Make every attempt to understand and become acquainted with him. With your increasing understanding of him, does your interest tend to expand? And along with the added interest, do you find yourself with a growing desire to help him in any way possible? How do you account for your change of attitude?
8. What are the rewards of nursing?
9. What is the "art of nursing"?

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APPENDICES

STATE OF NEW YORK — DEPARTMENT OF MENTAL HYGIENE

Post from This Monthly Record to the Permanent *Efficiency Record*

MONTHLY EFFICIENCY RECORD

PERSONALITY Month of _____ 19___

Name _____

Service _____

	Far Below Average	Below Average	Average	Above Average	Far Above Average
	Place Check in Appropriate Column				
ACCEPTABILITY TO PATIENT					
Do patients enjoy her presence?					
Does her speech and manner give evidence of refinement?					
ADAPTABILITY					
Does she readily adjust to:					
(*a*) people?					
(*b*) routine conditions?					
(*c*) emergencies?					
COURTESY					
Is she courteous in speech and action?					
DIGNITY					
Is she quiet and dignified?					
ECONOMY					
Is she reasonably economical with:					
(*a*) materials?					
(*b*) time?					
(*c*) energy?					
INDUSTRY					
Does she exhibit diligence and constancy in her work?					
Does she work rapidly without sacrificing quality of work?					
PERSONAL NEATNESS					
Is she careful in dress?					
RESOURCEFULNESS					
Is she capable of finding and adapting means to an end?					
SENSE OF HUMOR					
Does she have a sense of humor?					
SYMPATHY					
Is she sympathetic and kind to patients and their friends?					
SINCERITY					
Is she genuine and trustworthy?					
SELF-CONTROL					
Does she manifest an even temper under unusual conditions?					
HEALTH ATTITUDE					
Is she strong and vigorous:					
(*a*) physically?					
(*b*) mentally?					
Does she observe correct health habits?					
Does she utilize opportunities to promote health education?					
IMPROVEMENT					
Has she shown development in this department?					
Has she shown improvement in:					
(*a*) attitude?					
(*b*) work?					

STATE OF NEW YORK — DEPARTMENT OF MENTAL HYGIENE

MONTHLY EFFICIENCY RECORD

Professional Fitness

Place Check in Appropriate Column

	Far Below Average	Below Average	Average	Above Average	Far Above Average
Accuracy					
Does she execute procedures correctly?					
Does she chart with accuracy?					
Conscientiousness					
Does she assume responsibility for her own acts?					
Does she assume her share of ward activities?					
Is she attentive to details?					
Reaction to Criticism					
Does she accept criticism well?					
Does she profit by suggestions?					
Executive Ability					
Does she organize and execute her work efficiently?					
Is she capable of directing the work of others?					
Initiative					
Is she inventive in method and device?					
Interest in Work					
Does she utilize opportunities for increasing her clinical knowledge?					
Does she have a genuine enthusiasm for nursing?					
Loyalty					
Is she loyal to: (*a*) school?					
(*b*) associates?					
(*c*) patients?					
Is she coöperative?					
Memory					
Does she readily recall what she has learned through study or experience?					
Does she remember directions and follow them?					
Neatness in Work					
Does her work have a finished appearance?					
Observation					
Does she note changes in the mental and physical condition of her patients?					
Does she see work to be done other than that assigned?					
Punctuality					
Is she punctual in reporting on and off duty?					
Is she punctual for meals?					
Reliability					
Can you rely upon her judgment?					
Does she prove worthy of being depended upon?					
Tactfulness					
Does she have an intuitive appreciation of what is appropriate in a given situation?					

Remarks_____

Have you discussed this record with the student?_____

(*Signed*)_____

Charge Nurse

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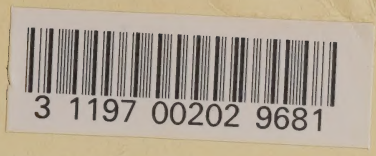
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